This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

+ *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.

+ *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.

+ *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.

+ *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at `http://books.google.com/`

3 2044 106 442 189

HERBARIUM COPY

U.S.
U-10

HARVARD UNIVERSITY

LIBRARY

OF THE

GRAY HERBARIUM

Received Nov. 3, 1910

Rebound May 5, 1939

SMITHSONIAN INSTITUTION
UNITED STATES NATIONAL MUSEUM

CONTRIBUTIONS

FROM THE

UNITED STATES NATIONAL HERBARIUM

VOLUME 15

THE NORTH AMERICAN SPECIES OF PANICUM

By A. S. HITCHCOCK and AGNES CHASE

WASHINGTON
GOVERNMENT PRINTING OFFICE
1910

BULLETIN OF THE UNITED STATES NATIONAL MUSEUM.

ISSUED OCTOBER 22, 1910.

PREFACE.

The accompanying paper, entitled The North American species of Panicum, by A. S. Hitchcock, Systematic Agrostologist of the United States Department of Agriculture, and Agnes Chase, Assistant in Systematic Agrostology, is the result of an exhaustive study of the material of this genus in the United States National Herbarium and in the other large herbaria of the United States. All the more important herbaria of Europe were visited by Mr. Hitchcock for the purpose of examining the type specimens of American species described by European authors. This opportunity is taken to acknowledge the many courtesies extended by the curators of the herbaria visited. In addition to the knowledge of the genus gained through an examination of many thousand herbarium specimens, the authors have had opportunity to collect material throughout the United States and have observed nearly all the species of that region in their native habitats. Because of the lack of material and of the necessary field studies, it has been impossible to present the species of tropical America with the same degree of detail as the species of the United States, but it has seemed advisable to include these tropical species in order to bring together in one paper our present knowledge of the genus in North America.

The authors describe 197 species and 8 subspecies, each of which is accompanied by a text figure illustrating the spikelet and fruit. The descriptions of species occurring within the limits of the United States are also accompanied by an outline map graphically representing the geographical distribution.

FREDERICK V. COVILLE,
Curator of the United States National Herbarium.

CONTENTS.

Page.

Introduction........ 1
  Basis and methods of the work........ 1
    American herbaria examined........ 1
    European herbaria examined........ 2
    Type specimens........ 4
    Synonymy........ 5
    Spelling of names........ 6
    Species, subspecies, and forms........ 7
    Geographical distribution........ 8
    Citation of specimens........ 8
    Text figures of spikelets........ 10
    Terminology........ 10
  History and limitation of the genus........ 11
    Pre-Linnæan use of the name........ 11
    The type of Panicum........ 13
    History of Panicum after 1753........ 15
    Genera here excluded........ 16
    Grouping of the species........ 17
Description of the genus and species........ 18
Doubtful species........ 329
List of new subgenera and species and new names........ 332
Index to numbered specimens........ 333
Index........ 389

ILLUSTRATIONS.

TEXT FIGURES.

Page.
Fig. 1. *Panicum distantiflorum* 23
2. *P. utowanaeum* 24
3. *P. chapmani* 25
4. Distribution of *P. chapmani* 25
5. *P. ramisetum* 26
6. Distribution of *P. ramisetum* 26
7. *P. reverchoni* 27
8. Distribution of *P. reverchoni* 27
9. *P. firmulum* 27
10. Distribution of *P. firmulum* 28
11. *P. geminatum* 31
12. Distribution of *P. geminatum* 32
13. *P. paludivagum* 32
14. Distribution of *P. paludivagum* 33
15. *P. barbinode* 34
16. Distribution of *P. barbinode* 35
17. *P. reptans* 37
18. Distribution of *P. reptans* 37
19. *P. fasciculatum* 38
20. Distribution of *P. fasciculatum* 40
21. *P. fasciculatum chartaginense* 41
22. Distribution of *P. fasciculatum chartaginense* 41
23. *P. molle* 42
24. *P. adspersum* 43
25. Distribution of *P. adspersum* 44
26. *P. arizonicum* 44
27. Distribution of *P. arizonicum* 46
28. *P. texanum* 46
29. Distribution of *P. texanum* 47
30. *P. vaseyanum* 47
31. *P. dichotomiflorum* 50
32. Distribution of *P. dichotomiflorum* 51
33. *P. bartowense* 52
34. Distribution of *P. bartowense* 53
35. *P. elephantipes* 53
36. *P. flexile* 56
37. Distribution of *P. flexile* 56
38. *P. gattingeri* 57
39. Distribution of *P. gattingeri* 57
40. *P. philadelphicum* 58
41. Distribution of *P. philadelphicum* 59

Page.
FIG. 42. *P. capillare* 60
43. Distribution of *P. capillare* 61
44. *P. barbipulvinatum* 62
45. Distribution of *P. barbipulvinatum* 63
46. *P. hirticaule* 64
47. Distribution of *P. hirticaule* 65
48. *P. pampinosum* 66
49. Distribution of *P. pampinosum* 66
50. *P. stramineum* 67
51. Distribution of *P. stramineum* 67
52. *P. sonorum* 68
53. *P. parcum* 68
54. *P. miliaceum* 69
55. Distribution of *P. miliaceum* 70
56. *P. cayennense* 70
57. *P. capillarioides* 72
58. Distribution of *P. capillarioides* 72
59. *P. diffusum* 73
60. *P. filipes* 73
61. Distribution of *P. filipes* 74
62. *P. hallii* 74
63. Distribution of *P. hallii* 75
64. *P. lepidulum* 76
65. *P. ghiesbreghtii* 76
66. *P. hirsutum* 77
67. *P. maximum* 78
68. Distribution of *P. maximum* 79
69. *P. plenum* 80
70. Distribution of *P. plenum* 81
71. *P. bulbosum* 82
72. Distribution of *P. bulbosum* 83
73. *P. bulbosum sciaphilum* 83
74. Distribution of *P. bulbosum sciaphilum* 84
75. *P. repens* 85
76. Distribution of *P. repens* 86
77. *P. gouini* 86
78. Distribution of *P. gouini* 87
79. *P. virgatum* 89
80. Distribution of *P. virgatum* 90
81. *P. virgatum cubense* 92
82. Distribution of *P. virgatum cubense* 92
83. *P. havardii* 93
84. Distribution of *P. havardii* 93
85. *P. amarum* 94
86. Distribution of *P. amarum* 95
87. *P. amarulum* 96
88. Distribution of *P. amarulum* 96
89. *P. tenerum* 97
90. Distribution of *P. tenerum* 98
91. *P. stenodes* 98
92. *P. agrostoides* 100
93. Distribution of *P. agrostoides* 101
94. *P. condensum* 102

Page.
FIG. 95. Distribution of *P. condensum* 103
96. *P. stipitatum* 104
97. Distribution of *P. stipitatum* 104
98. *P. longifolium* 105
99. Distribution of *P. longifolium* 106
100. *P. combsii* 106
101. Distribution of *P. combsii* 107
102. *P. anceps* 107
103. Distribution of *P. anceps* 108
104. *P. rhizomatum* 109
105. Distribution of *P. rhizomatum* 110
106. *P. longum* 111
107. *P. polygonatum* 112
108. *P. pilosum* 114
109. *P. laxum* 116
110. *P. exiguiflorum* 117
111. *P. hians* 118
112. Distribution of *P. hians* 119
113. *P. cupreum* 120
114. *P. stoloniferum* 121
115. *P. frondescens* 122
116. *P. pulchellum* 123
117. *P. biglandulare* 124
118. *P. virgultorum* 125
119. *P. schmitzii* 125
120. *P. parviglume* 126
121. *P. verrucosum* 127
122. Distribution of *P. verrucosum* 127
123. *P. brachyanthum* 128
124. Distribution of *P. brachyanthum* 129
125. *P. trichoides* 130
126. *P. trichanthum* 131
127. *P. urvilleanum* 133
128. Distribution of *P. urvilleanum* 133
129. *P. costaricense* 134
130. *P. parvifolium* 135
131. *P. millegrana* 137
132. *P. glutinosum* 138
133. *P. rudgei* 139
134. *P. rotundum* 140
135. *P. megiston* 141
136. *P. depauperatum* 152
137. Distribution of *P. depauperatum* 153
138. *P. perlongum* 154
139. Distribution of *P. perlongum* 154
140. *P. linearifolium* 155
141. Distribution of *P. linearifolium* 156
142. *P. werneri* 157
143. Distribution of *P. werneri* 157
144. *P. laxiflorum* 158
145. Distribution of *P. laxiflorum* 159
146. *P. xalapense* 160
147. Distribution of *P. xalapense* 160

Page.
FIG. 148. *P. xalapense strictirameum*............ 161
149. Distribution of *P. xalapense strictirameum*............ 161
150. *P. ciliatum*............ 162
151. Distribution of *P. ciliatum*............ 163
152. *P. polycaulon*............ 163
153. Distribution of *P. polycaulon*............ 164
154. *P. strigosum*............ 164
155. Distribution of *P. strigosum*............ 165
156. *P. aciculare*............ 167
157. Distribution of *P. aciculare*............ 168
158. *P. chrysopsidifolium*............ 168
159. Distribution of *P. chrysopsidifolium*............ 169
160. *P. consanguineum*............ 169
161. Distribution of *P. consanguineum*............ 170
162. *P. angustifolium*............ 171
163. Distribution of *P. angustifolium*............ 171
164. *P. fusiforme*............ 172
165. Distribution of *P. fusiforme*............ 173
166. *P. arenicoloides*............ 173
167. Distribution of *P. arenicoloides*............ 174
168. *P. ovinum*............ 175
169. Distribution of *P. ovinum*............ 175
170. *P. neuranthum*............ 176
171. Distribution of *P. neuranthum*............ 176
172. *P. bicknellii*............ 177
173. Distribution of *P. bicknellii*............ 177
174. *P. calliphyllum*............ 178
175. Distribution of *P. calliphyllum*............ 178
176. *P. nudicaule*............ 179
177. Distribution of *P. nudicaule*............ 179
178. *P. microcarpon*............ 182
179. Distribution of *P. microcarpon*............ 182
180. *P. nitidum*............ 184
181. Distribution of *P. nitidum*............ 184
182. *P. multirameum*............ 185
183. *P. annulum*............ 186
184. Distribution of *P. annulum*............ 186
185. *P. mattamuskeetense*............ 187
186. Distribution of *P. mattamuskeetense*............ 187
187. *P. clutei*............ 188
188. Distribution of *P. clutei*............ 188
189. *P. boreale*............ 189
190. Distribution of *P. boreale*............ 190
191. *P. dichotomum*............ 191
192. Distribution of *P. dichotomum*............ 192
193. *P. barbulatum*............ 193
194. Distribution of *P. barbulatum*............ 194
195. *P. yadkinense*............ 195
196. Distribution of *P. yadkinense*............ 196
197. *P. roanokense*............ 196
198. Distribution of *P. roanokense*............ 197
199. *P. caerulescens*............ 197
200. Distribution of *P. caerulescens*............ 198

Page.
FIG. 201. *P. lucidum* 198
202. Distribution of *P. lucidum* 199
203. *P. sphagnicola* 200
204. Distribution of *P. sphagnicola* 200
205. *P. spretum* 202
206. Distribution of *P. spretum* 202
207. *P. lindheimeri* 203
208. Distribution of *P. lindheimeri* 204
209. *P. leucothrix* 205
210. Distribution of *P. leucothrix* 206
211. *P. longiligulatum* 206
212. Distribution of *P. longiligulatum* 207
213. *P. wrightianum* 207
214. Distribution of *P. wrightianum* 208
215. *P. meridionale* 211
216. Distribution of *P. meridionale* 211
217. *P. albemarlense* 212
218. Distribution of *P. albemarlense* 213
219. *P. implicatum* 213
220. Distribution of *P. implicatum* 214
221. *P. huachucae* 215
222. Distribution of *P. huachucae* 216
223. *P. huachucae silvicola* 217
224. Distribution of *P. huachucae silvicola* 218
225. *P. tennesseense* 219
226. Distribution of *P. tennesseense* 219
227. *P. lanuginosum* 221
228. Distribution of *P. lanuginosum* 222
229. *P. acuminatum* 223
230. *P. auburne* 223
231. Distribution of *P. auburne* 224
232. *P. thurowii* 224
233. Distribution of *P. thurowii* 225
234. *P. olivaceum* 225
235. *P. praecocius* 226
236. Distribution of *P. praecocius* 227
237. *P. subvillosum* 227
238. Distribution of *P. subvillosum* 228
239. *P. occidentale* 229
240. Distribution of *P. occidentale* 229
241. *P. pacificum* 230
242. Distribution of *P. pacificum* 230
243. *P. thermale* 231
244. Distribution of *P. thermale* 231
245. *P. languidum* 232
246. Distribution of *P. languidum* 232
247. *P. villosissimum* 234
248. Distribution of *P. villosissimum* 235
249. *P. pseudopubescens* 236
250. Distribution of *P. pseudopubescens* 236
251. *P. ovale* 237
252. Distribution of *P. ovale* 238
253. *P. scoparioides* 238

Page.

FIG. 254. Distribution of *P. scoparioides* 239
255. *P. shastense* 239
256. Distribution of *P. shastense* 240
257. *P. malacon* 241
258. Distribution of *P. malacon* 241
259. *P. commonsianum* 242
260. Distribution of *P. commonsianum* 242
261. *P. addisonii* 243
262. Distribution of *P. addisonii* 244
263. *P. wilmingtonense* 244
264. Distribution of *P. wilmingtonense* 245
265. *P. tsugetorum* 245
266. Distribution of *P. tsugetorum* 246
267. *P. columbianum* 247
268. Distribution of *P. columbianum* 248
269. *P. columbianum thinium* 248
270. Distribution of *P. columbianum thinium* 249
271. *P. oricola* 249
272. Distribution of *P. oricola* 250
273. *P. sphaerocarpon* 251
274. Distribution of *P. sphaerocarpon* 252
275. *P. sphaerocarpon inflatum* 254
276. Distribution of *P. sphaerocarpon inflatum* 254
277. *P. polyanthes* 255
278. Distribution of *P. polyanthes* 256
279. *P. erectifolium* 257
280. Distribution of *P. erectifolium* 257
281. *P. tenue* 259
282. Distribution of *P. tenue* 260
283. *P. albomarginatum* 260
284. Distribution of *P. albomarginatum* 261
285. *P. trifolium* 261
286. Distribution of *P. trifolium* 262
287. *P. flavovirens* 262
288. Distribution of *P. flavovirens* 263
289. *P. concinnius* 263
290. Distribution of *P. concinnius* 264
291. *P. ensifolium* 265
292. Distribution of *P. ensifolium* 266
293. *P. vernale* 266
294. Distribution of *P. vernale* 267
295. *P. curtifolium* 268
296. Distribution of *P. curtifolium* 268
297. *P. chamaelonche* 269
298. Distribution of *P. chamaelonche* 269
299. *P. glabrifolium* 270
300. Distribution of *P. glabrifolium* 270
301. *P. breve* 271
302. Distribution of *P. breve* 271
303. *P. pauciciliatum* 272
304. Distribution of *P. pauciciliatum* 272
305. *P. lancearium* 273
306. Distribution of *P. lancearium* 274

Page.
FIG. 307. *P. patulum* 275
308. Distribution of *P. patulum* 275
309. *P. webberianum* 276
310. Distribution of *P. webberianum* 277
311. *P. patentifolium* 277
312. Distribution of *P. patentifolium* 278
313. *P. wilcoxianum* 279
314. Distribution of *P. wilcoxianum* 279
315. *P. malacophyllum* 280
316. Distribution of *P. malacophyllum* 281
317. *P. helleri* 282
318. Distribution of *P. helleri* 282
319. *P. scribnerianum* 284
320. Distribution of *P. scribnerianum* 285
321. *P. oligosanthes* 286
322. Distribution of *P. oligosanthes* 287
323. *P. ravenelii* 288
324. Distribution of *P. ravenelii* 288
325. *P. leibergii* 289
326. Distribution of *P. leibergii* 290
327. *P. xanthophysum* 291
328. Distribution of *P. xanthophysum* 292
329. *P. pedicellatum* 292
330. Distribution of *P. pedicellatum* 293
331. *P. nodatum* 293
332. Distribution of *P. nodatum* 294
333. *P. scoparium* 295
334. Distribution of *P. scoparium* 296
335. *P. viscidellum* 296
336. *P. aculeatum* 297
337. Distribution of *P. aculeatum* 298
338. *P. scabriusculum* 299
339. Distribution of *P. scabriusculum* 299
340. *P. cryptanthum* 300
341. Distribution of *P. cryptanthum* 300
342. *P. ashei* 302
343. Distribution of *P. ashei* 302
344. *P. commutatum* 305
345. Distribution of *P. commutatum* 306
346. *P. mutabile* 307
347. Distribution of *P. mutabile* 308
348. *P. joorii* 309
349. Distribution of *P. joorii* 309
350. *P. equilaterale* 310
351. Distribution of *P. equilaterale* 311
352. *P. albomaculatum* 311
353. *P. clandestinum* 313
354. Distribution of *P. clandestinum* 313
355. *P. latifolium* 315
356. Distribution of *P. latifolium* 316
357. *P. boscii* 318
358. Distribution of *P. boscii* 319
359. *P. boscii molle* 320

Page.
FIG. 360. Distribution of *P. boscii molle*........ 320
361. *P. obtusum*........ 321
362. Distribution of *P. obtusum*........ 322
363. *P. hemitomon*........ 323
364. Distribution of *P. hemitomon*........ 324
365. *P. ciliatissimum*........ 324
366. Distribution of *P. ciliatissimum*........ 325
367. *P. zizanioides*........ 326
368. *P. gymnocarpon*........ 327
369. Distribution of *P. gymnocarpon*........ 328
370. *P. decolorans*........ 328

THE NORTH AMERICAN SPECIES OF PANICUM.

By A. S. Hitchcock and Agnes Chase.

INTRODUCTION.

BASIS AND METHODS OF THE WORK.

The present paper discusses the species of Panicum known to occur in North America north of Panama, including the West Indies. The results presented are based primarily upon the collections in the United States National Herbarium. The collections of Panicum in all the large herbaria in this country and in Europe have also been examined. In addition to the work done on this large amount of herbarium material both authors have carried on for several years extensive field studies in all parts of the United States, as is indicated by the specimens cited under "Distribution." A number of species of the section Dichanthelium have been grown for several seasons in the greenhouse in order to determine the relation between the vernal and autumnal forms.

AMERICAN HERBARIA EXAMINED.

Biltmore, North Carolina. The Biltmore Herbarium, containing the types of most of the grasses published by Chapman in his Flora of the Southern States.

Cambridge. The Gray Herbarium of Harvard University.

Chicago. The herbarium of the Field Museum of Natural History.

New York City. The herbarium of the New York Botanical Garden, at Bronx Park. The herbarium of Columbia University, which is kept apart from the general herbarium of the Botanical Garden, contains the Torrey Herbarium, each sheet of which is appropriately stamped. The private herbarium of Mr. George V. Nash is also located at the Botanical Garden.

Philadelphia. The herbarium of the Academy of Natural Sciences of Philadelphia, containing the plants of Nuttall and Buckley incorporated in the general herbarium, and the Muhlenberg Herbarium and the Short Herbarium segregated.

ST. LOUIS. The herbarium of the Missouri Botanical Garden. This contains the Bernhardi Herbarium and the Engelmann Herbarium incorporated in the general herbarium.

WASHINGTON. The United States National Herbarium in the National Museum.

Besides the above many smaller collections were examined, about 45 in all, from the herbaria of educational institutions and from private individuals, among which may be mentioned the following:

The Elliott Herbarium at the Charleston Museum, Charleston, South Carolina, containing the types of species described in Elliott's Sketch of the Botany of South Carolina and Georgia.

The Parry Herbarium, at the Iowa State College, Ames, Iowa.

The Gattinger Herbarium, at the University of Tennessee, Knoxville, Tennessee.

The private herbarium of Mr. W. W. Ashe, Forest Service, Washington, D. C., containing the types of many species described by him in the Journal of the Elisha Mitchell Society. For several years this herbarium has been in storage and not easily accessible. Mr. Ashe kindly loaned a portion of the collection of Panicum in December, 1905. A second portion was sent in February, 1908. Certain of Mr. Ashe's type specimens were not included in either of those loans, but they may become accessible at some future time. These are mentioned under the appropriate species.

The private herbarium of Prof. F. Lamson-Scribner, which was partially destroyed by fire in 1894. The remaining portion, consisting of the Paniceae, Poa, and a part of the Agrostideae, together with subsequent additions, was purchased by A. S. Hitchcock in 1905 and is now at the United States Department of Agriculture.

The Mohr Herbarium, now at the United States National Herbarium.

We have been unable to locate the types of Rafinesque or of Alphonso Wood.

EUROPEAN HERBARIA EXAMINED.

ANTWERP. The herbarium of the late Doctor Van Huerck contains a good set of the plants collected by Salzmann in Bahia, Brazil.

ATTERSEE. Here is the large and important private herbarium of the eminent Austrian agrostologist, Dr. Eduard Hackel, formerly of St. Pölten, later of Graz.

BERLIN. The herbarium is at the Königlicher Botanischer Garten, which is located at Dahlem-Steglitz, a suburb. The Willdenow Herbarium is kept apart.

Brussels. The herbarium of the Jardin Botanique de l'État contains some of Fournier's types, especially those based on the collection of Galeotti from Mexico.

Copenhagen. The herbarium is at the Universitets Botaniska Have, or Botanical Garden of the University. Of especial importance is the large collection of Liebmann plants from Mexico.

Florence. At the herbarium of the Orto Botanico are many types of Poiret in the Desfontaines Herbarium. There are also many duplicate types of Desvaux and Lamarck and a good collection of Bosc's Carolina plants.

Geneva. There are three large herbaria here. The Conservatoire et Jardin Botaniques contain the Delessert Herbarium. The De Candolle Herbarium, in the city of Geneva, and the herbarium of William Barbey, known as the Boissier Herbarium, at Chambésy, a suburb, are both private. There is also a smaller herbarium at the Institut de Botanique de l'Université.

Göttingen. Of chief interest to American botanists is the Grisebach Herbarium, at the Botanischer Garten der Universität.

Halle. Prof. Carl Mez has been engaged for several years upon a revision of the Paniceae for Engler's Pflanzenreich. He has borrowed the grasses of this group from several of the larger European herbaria. These collections were examined at Halle through the courtesy of Doctor Mez.

London. The rich collections of this city are grouped at three places. The largest collection is at the Royal Botanic Gardens at Kew, a suburb of London. This contains many types of species described by Pursh. The herbarium of the British Museum of Natural History, at South Kensington, contains, aside from the general collection in which is the Gronovius Herbarium and many authentic specimens from Raddi, Rudge, and others, certain segregated herbaria, two of which are the Sloane Herbarium and a small collection of Walter's plants. The Linnæan Herbarium is at the rooms of the Linnæan Society of London.

Madrid. The herbarium at the Jardin Botanico contains the types of Cavanilles and Lagasca.

Munich. The herbarium at the Königliches Botanisches Museum contains the collections of Martius from Brazil, the grasses of which were described by Nees von Esenbeck in his Agrostographia Brasiliensis and by Doell in Martius's Flora Brasiliensis. There are also duplicates from Swartz and Lagasca.

Padua. At the Orto Botanico is an important collection made by Bosc in Carolina. These plants were obtained mostly in the vicinity of Charleston, South Carolina, and Wilmington, North Carolina.[a]

---

[a] Lasègue, Musée Botanique de Delessert 201. 1845.

Paris. From an agrostological standpoint the collections at Paris are of great importance. The herbarium is at the Muséum d'Histoire Naturelle in the Jardin des Plantes. The general herbarium contains the types of Bonpland, Desvaux, Fournier, Richard, and Steudel. The Michaux Herbarium, the Jussieu Herbarium, and the Lamarck Herbarium are severally segregated. The Cosson Herbarium recently acquired by the Muséum contains many Poiret types. The private herbarium of Drake de Castillo, now located at Rue de Balzac 2, and containing the Franqueville Herbarium, has come under the control of the Muséum. Here are many duplicate types of Michaux and Richard, and a set of Schaffner's Mexican plants.

Prague. To Americans the most important plants here are those collected by Haenke and described by C. B. and J. S. Presl in Reliquiae Haenkeanae. A part of the grasses are at the Museum des Königreichs Böhmen and a part at the Botanischer Garten of the German University.

St. Petersburg. The herbarium of the Botanical Garden contains the Mexican collections of Karwinsky and F. Mueller, among which are several of Fournier's types. To agrostologists a very important herbarium is that of Trinius at the Académie Impériale des Sciences de St. Pétersbourg. This is kept apart from the general herbarium.

Stockholm. The herbarium of the Naturhistoriska Riksmuseum contains the types of Fries and Lindman from South America and, segregated, the Swartz Herbarium of West Indian plants.

Vienna. The most important herbarium is that of the Kaiserliches und Königliches Naturhistorisches Hofmuseum.

TYPE SPECIMENS.

As indicated in a previous paper[a] the type specimen of a species is that specimen or one of the specimens from which the author drew up the description, or the specimen which the author had chiefly in mind when writing the description. Not infrequently the description is based upon a single specimen, in which case there is no doubt as to what specimen is the type. Sometimes the author had several specimens at hand, in which case it becomes necessary to determine, if possible, which specimen represented to the author his ideal of the species. This may be shown, in case the author has designated no type, by the specific name, which may indicate a collector or locality, or by a careful comparison of the description, and especially of notes, with the specimens, or by some note upon the sheets of specimens which the author is known to have had before him at the time of describing the species. In the absence of any indication that will point toward a particular specimen, the first one mentioned or the one from the locality first mentioned with the original description, or at least the first one among those equally eligible, is chosen as the type.

---

[a] Hitchcock, Types of American Grasses, Contr. Nat. Herb. **12**: 113. 1908.

Immediately following the citation of the name and its place of publication, is, quoted verbatim, when practicable, the "type locality," or that portion of the author's statement which indicates the origin of his specimen. Where there is doubt as to what specimen is the type, the reasons are given for choosing any particular specimen. All the types mentioned have been examined by one or both of the authors unless otherwise stated. After quoting from the original publication the portion relating to the type, we have indicated the location of the type specimen and have recorded any information concerning the specimen, or any data of significance upon the label.

SYNONYMY.

The name of each species accepted in this work is the earliest valid name, as governed by the recent American Code of Botanical Nomenclature.[a] Under the accepted name the synonyms have been placed in chronological sequence.

Nomina nuda have been mentioned only when they have found their way into botanical literature, especially the Index Kewensis. If such nomina nuda can be identified by type specimens they are placed as synonyms of the species to which the type belongs. If they were originally mentioned as synonyms but can not be identified, they are placed under those species to which they were assigned as synonyms.

Typonyms are different names based upon the same type. When an author definitely changes a name, or substitutes one name for another, the old name and the new are typonyms of each other. This is the case even when the author making such change describes a different species, or cites incorrect synonyms or specimens that belong to a different species. As an example of a simple change of name we have,[b] "*Panicum ramisetum* Scribn. nom. nov. *Panicum subspicatum* Vasey, U. S. Dept. Agr. Div. Bot. Bul. **8**: 25, 1889, not Desvaux, Opuscules 84, 1831." The evidence here is complete that *Panicum ramisetum* Scribn. and *P. subspicatum* Vasey are typonyms. As an example of change of name accompanied by a description of a different species may be given, *Panicum polyneuron* Steud.[c] The author had evidently seen no specimen of this himself, but translates the description of *P. nervosum* Muhl. given by Torrey[a] and cites as synonym, "*P. nervosum* Mühlbrg. Gram. p. 116," and also cites "*Torr.* Fl. N. Am. I. 143." Steudel apparently changes the name on account of *P. nervosum* Lam., which he described on the same page. The grass described by Steudel, that is, the one described by Torrey, is *P. latifolium* L., but since Steudel intended to change Muhlenberg's name, *P. polyneuron* Steud. is a typonym of *P. nervosum* Muhl., which is *P. commutatum* Schult. Hence *P. polyneuron* is placed as a synonym under *P. commutatum* Schult.

---

[a] Bull. Torrey Club **34**: 167–178. 1907.

[b] U. S. Dept. Agr. Div. Agrost. Circ. **27**: 9. 1900.

[c] Syn. Pl. Glum. 1:91. 1854.

A change of rank of misapplied names has not infrequently been made by authors. Such names are typonyms of the original regardless of the plant described. For example, *Panicum nitidum barbulatum* Chapm.[b] is based on *P. barbulatum* Michx., but the species described by Chapman is *P. microcarpon* Muhl. Nevertheless *P. nitidum barbulatum* Chapm. is a typonym of *P. barbulatum* Michx. In the same way all subspecific names based on *P. barbulatum* Michx., to whatever species applied, are typonyms of *P. barbulatum* Michx. and are listed under that species in this paper, though the species described, or the one the particular author supposed he was transferring, was usually *P. microcarpon* Muhl.

The cases are not infrequent where one author has misapplied the name of a preceding author—that is, under a given name has described a different species. Pursh[c] uses the name *Panicum diffusum* Swartz, but describes a different species, *P. flexile* (Gattinger) Scribn. The Index Kewensis lists the former as "*Panicum diffusum* Pursh." This is misleading, as Pursh did not intend to describe a new species with the name *P. diffusum*. It is a case of misapplication of a name, or an error of determination. Names of this kind are not listed as synonyms, but, where the importance warrants it, they are mentioned as misapplications in a note at the end of the synonymy.

SPELLING OF NAMES.

The original spelling of names has been followed, except that typographical errors and wrong gender endings have been corrected. It is not always easy to determine how far it is proper to carry such corrections. In the case of *Panicum sphagnicolum* Nash, we have adopted the change to "*sphagnicola*," already made by its author in Britton's Manual, but it has not seemed wise to make such changes as "*oligosanthes*" to "*oliganthum*." Occasionally the original spelling of names has been inadvertently altered by later authors. As an example of this may be mentioned "*barbatum*" and "*barbatulum*" instead of the original "*barbulatum*." Such misspellings are not given formal standing as synonyms, but are listed under the proper paragraph—that is, in this case, under *Panicum barbulatum.*

---

[a] Fl. North. & Mid. U. S. 143. 1823.

[b] Fl. South. U. S. ed. 3. 586. 1897.

[c] Fl. Amer. Sept. 1: 68. 1814.

SPECIES, SUBSPECIES, AND FORMS.

The determination of the relation of taxonomic groups rests, in the last analysis, upon judgment and experience. Such judgment is greatly influenced by the amount of material that has been examined, both in the herbarium and in the field. Our judgment concerning the taxonomic rank of many of the less known groups may be altered after an examination of more specimens. The herbarium may show only 1 per cent of specimens intermediate between two groups, while a study of the same groups in the field may show a much larger proportion of intergrades. Or, field work may show, on the other hand, that the peculiar or intermediate specimens are rare and that the two groups are easily distinguished. The line is not sharp between forms and subspecies nor between subspecies and species. If a group of specimens presents constant characters of what we consider major importance, it is recognized as representing a species. If the characters are of minor importance, but constant and well marked, and the specimens tend to show a distinct geographical range, the group may still be given the rank of a species. If two groups present fairly well marked characters, but there is a considerable proportion of intermediate specimens—that is, the characters are not constant for the two groups—they stand in the relation of species and subspecies. The names species and subspecies are a taxonomic convenience and are entirely arbitrary. They may not represent a biological relation in the sense that one is an offshoot or development from the other, but signify only that the form to which the name species was applied was recognized and given taxonomic or nomenclatorial standing before the other. The species may be the less common or a product of local conditions. *Panicum huachucae* is the name applied originally to a specimen from the Huachuca Mountains, Arizona, but represents an outlying form of a widespread species. The commoner form has been designated a subspecies, *P. huachucae silvicola,* because the name was applied to this at a later date.

On the other hand, the fact that there are occasional intermediate specimens does not, of itself, invalidate the standing of two related groups as species. It becomes then both a question of fact and a question of judgment. If the two groups as a whole show well-marked and fairly constant characters, and an examination of a large number of specimens indicates that as a matter of fact the number of intergrades is comparatively few, we have accepted the two groups as species and have mentioned intermediate herbarium specimens.

The geographical range of a form is to be taken into consideration along with the morphological characters, in determining the taxonomic standing of a given group. A group distinguished by small differences in morphological characters may be assigned subspecific or even specific rank when the differences are supported by a distinct or at least a different geographical range. Groups that are not sufficiently distinct to be assigned subspecific rank are mentioned after the general description of the species and specimens are cited as illustrations. In a few cases these citations are given in a formal manner to emphasize the distinctness of the group, in which cases the same specimens do not occur among those cited in the general distribution. Usually the specimens mentioned as illustrating a particular departure from the typical form are cited by collector and number or date only, and are repeated under "Distribution." The locality is given in such cases only when the geographical range is of significance.

GEOGRAPHICAL DISTRIBUTION.

The species of the genus Panicum, numbering probably about five hundred, are found in the Tropics and warm temperate regions of both hemispheres. In North America the genus extends throughout the West Indies, Central America, Mexico, and the United States and into the southern part of the Dominion of Canada. The subgenus Dichanthelium, which includes over one-half the species of the entire genus as represented in North America, is confined to the Western Hemisphere and almost to North America. The center of distribution of this group is the Atlantic Coastal Plain of the Southeastern States, whence it extends north to the eastern Canadian Provinces, west to the Pacific coast and British Columbia and south through Mexico and the West Indies to northern South America. A few species of true Panicum, such as *P. virgatum* and species of Capillaria, also extend over a wide range. The latter group is represented from Maine to British Columbia and southward into South America. The genus is poorly represented in the mountainous regions of the United States and not at all at high altitudes. *Panicum thermale* is found around hot springs in the Rocky Mountains at an altitude of 2,000 meters, but this is an exceptional case. The genus is poorly represented on the Great Plains and especially in the arid regions of the Great Basin. As to habitat, the species are found growing under a variety of conditions, but rarely in shady, hard-wood forests.

CITATION OF SPECIMENS.

The general range of all species is given, so far as indicated by specimens, even when this range extends beyond the limits of North America. The detailed citation of specimens is given by

States or countries, the States being in the sequence followed by the Century Atlas, the other countries and provinces being interpolated or added with the intention of preserving the general sequence from north to south. Mexico and Central America precede the West Indies. The islands of Tobago and Trinidad are considered as belonging geographically to South America and are listed after Venezuela. All specimens cited in the distribution or mentioned in the notes are in the United States National Herbarium unless otherwise stated. Specimens from other herbaria are cited from States or countries when such specimens add to the known range or fill in gaps in the listed distribution. In such cases only one specimen is mentioned from each additional State, unless the species is rare or of peculiar distribution. These additions are taken from other herbaria in the following order: Hitchcock's herbarium, Gray Herbarium, herbarium of the Academy of Philadelphia, herbarium of the Missouri Botanical Garden, Biltmore Herbarium, herbarium of the Field Museum, the herbarium of the New England Botanical Club, and other local herbaria in no particular sequence.

In order to save space, specimens are cited by collector and number only, or, if the collector's number is not given, the year is stated.[a] This method makes clear in most cases the identity of the specimens listed. It must be borne in mind that when a specimen is cited by the collector's number it refers to the particular sheet in the National Herbarium or other herbarium mentioned. It not infrequently occurs that two or more species, collected at the same time and place, or collected at different times and places but supposed by the collector to be the same species, are distributed under the same number to different herbaria. Collectors have in some cases sent to the National Herbarium a set of grasses for identification, and later distributed other sets in which the species under certain numbers were different from those submitted for names. This is especially misleading if the labels state that the sets have been determined at the National Herbarium or the Department of Agriculture or by a specialist whose name appears upon the label. The numbered sets collected by Charles Wright in Cuba, which contain many examples of more than one species distributed under one number, have been discussed in an earlier publication.[b]

The locality cited in the distribution does not always exactly agree with that given on the label. Occasionally, for convenience, several specimens from the same general locality are listed under one heading; for instance, "Vicinity of Cape Henry" may include specimens labeled "Virginia Beach" or "Lynn Haven." This has not often been done and only when the number identifies the sheet. Specimens are listed under the names of the States as they are at present recognized and limited. Those labeled as from Indian Territory are listed under Oklahoma.

---

[a] *Smith* 1900 indicates that the specimen is Smith's number 1900; *Smith* in 1900 indicates that the specimen was collected by Smith in the year 1900.

[b] Hitchcock, Contr. Nat. Herb. **12:** 185. 1909.

The maps illustrating distribution are intended to present graphically the general range of each species within the United States. Usually a single dot is placed upon the map in each State in which the species is known to grow, as indicated by herbarium specimens. In the larger States a dot may be placed in each of the general divisions in which the species occurs. If the species is found throughout a State the dot representing this may be placed in the center, but if the species is confined to a particular portion of a State, such as the coastal plain of South Carolina, or subtropical Florida, the dot is placed in that portion.

TEXT FIGURES OF SPIKELETS.

Each species is illustrated by a text figure showing usually two views of the spikelet and one view of the fruit. The spikelet is usually shown as seen from the front and from the back, but in a few species the side view is shown, when this is more characteristic. The fruit is placed by the side of the spikelet, and on a line with its position within the spikelet, so that its relation to the other parts is readily apparent. These figures are all magnified ten diameters.

The spikelets from which the drawings are made were usually from the type specimens of the species. In most cases where the type specimen was not accessible the drawings were made from the type or duplicate type specimens of one of the synonyms. In a very few cases the drawings were made from specimens which were not types or duplicate types. The identity of the specimen from which the drawing was made is indicated in each case.

TERMINOLOGY.

No new terms are used in the present paper, but it may be well to call attention to the term "lemma," and to certain other terms used in a somewhat restricted or modified sense. The lemmas, or the flowering glumes of some authors, are the bracts of the spikelet above the empty glumes. A lemma is said to be fertile when it bears a perfect flower in its axil, and sterile when its flower is staminate or suppressed. The term "fruit" is used to include the caryopsis and its inclosing lemma and palea. In the subgenus Dichanthelium the terms "vernal form" and "autumnal form" are used for the two successive seasonal conditions of the individuals. The vernal form appears early in the season, in spring or early summer, and is followed sooner or later by the branched stage called the "autumnal form."

HISTORY AND LIMITATION OF THE GENUS.

PRE-LINNÆAN USE OF THE NAME.

The name Panicum, as used by the ancient Latin authors, referred to *Chaetochloa italica* (L.) Scribn. (*Panicum italicum* L.), and the genus Panicum of the medieval botanists was based mainly upon this species, which was commonly cultivated as a cereal. Tournefort [a] gave the genus a more formal standing and described fifteen species, one of which he figured. By him the genus is characterized as having the flowers aggregated in a spike and is made to include species now referred to *Chaetochloa italica* (L.) Scribn., *C. viridis* (L.) Scribn., *C. verticillata* (L.) Scribn., *Pennisetum americanum* (L.) Schum., *Echinochloa crusgalli* (L.) Beauv., *Polypogon monspeliensis* (L.) Desf., and *Gastridium lendigerum* (L.) Gaud. The species figured, however, is a form of *Chaetochloa italica*, which is, therefore, the type of Panicum as limited by Tournefort.

On the other hand the ancient name Milium referred to *Panicum miliaceum* L., the common millet of Europe. Tournefort followed his predecessors in including under the genus Milium the millets (*Panicum miliaceum* L.) and the sorghums (*Holcus sorghum* L.), but figures the former.

Linnæus [b] at first recognized the two genera Panicum and Milium, basing the former on "Panicea *Scheuch.* 2:2," and the latter on "*Tournef.* 298." The Scheuchzer [c] figures cited by Linnæus are those of the spikelets of *Chaetochloa viridis* and *Echinochloa crusgalli*. Linnæus's description states that the involucre is many-leaved and capillary ("Involucrum uniflorum, polyphyllum: foliolis capillaribus, inaequalis insertionis"), which refers to the genus Chaetochloa Scribn. (Setaria Beauv.). This description, together with his reference to Scheuchzer, would indicate *Chaetochloa viridis* (L.) Scribn. as the species considered by Linnæus as typical of his genus Panicum. He also adds a note that in some species the valve of the corolla terminates in an awn, which statement refers to *Echinochloa crusgalli*. Linnæus here uses the name Milium in the same sense as does Tournefort. The two genera are treated in the same manner in the succeeding editions of the Genera Plantarum, up to and including the fourth, published in 1752, except that a statement is added to the effect that an involucre is wanting in some species. In the fifth edition of this work [d] the reference to Scheuchzer is omitted, as is also that portion of the diagnosis which refers to the involucre, and the above-mentioned note is replaced by one to the effect that species are included in which there is a many-leaved, capillary involucre. That is, in the first edition of this work that was published after the Species Plantarum the genus Panicum was based upon species having a 3-valved calyx and lacking awns and involucre. But it is clear from the note that Linnæus here also referred to the genus Panicum those species in which the spikelet is awned and those with an involucre. It is true he refers to the corolla valves as being awned, but this is apparently an error, and originated from a misinterpretation of Scheuchzer's figure[a] of *Echinochloa crusgalli.*

---

[a] Inst. Rei Herb. 1: 515. *pl. 298. f. M.* 1700.

[b] Gen. Pl. 17. 1737.

[c] Agrost. 45. *pl. 2. f: 2.* 1719.

[d] Gen. Pl. 29. 1754.

As stated above the genus Milium, as described in the first edition of Linnæus's Genera Plantarum, is based on the species now called *Panicum miliaceum* L. and is taken directly from Tournefort's work. The calyx is described as 3-valved. In the next three editions of the Genera Plantarum, Linnæus still cites Tournefort as the author of Milium and refers to his plate 298, but he changes the diagnosis to read, calyx 2-valved, and adds the note that Milium with a 2-valved calyx differs from Panicum with a 3-valved calyx. The genus appears in the fifth and sixth editions as in the preceding three editions, except that the last-mentioned note is omitted.

The treatment of the two genera in the Species Plantarum[b] is in accord with that in the fifth edition of the Genera Plantarum. Under Panicum twenty species are described, divided into two groups, Spicata and Paniculata. The species are as follows:

SPICATA.

1. *P. alopecuroid*[*es*]=*Pennisetum caffrum* (Bory) Leeke.

Munro[c] states that the specimen in the Linnæan Herbarium is *Gymnothrix thouarii* Beauv., which species is referred by Leeke[d] as above. This is a different species from *Pennisetum alopecuroides* Desv.[e] or *Pennisetum alopecuroides* Spreng.,[f] which is based on *Cenchrus alopecuroides* Thunb.

2. *P. glaucum* =*Chaetochloa glauca* (L.) Scribn.
P. glaucum β =*Chaetochloa viridis* (L.) Scribn.
P. glaucum γ =*Chaetochloa glauca* (L.) Scribn.[g]
3. *P. americanum*=*Pennisetum americanum* (L.) Schum.
4. *P. italicum* =*Chaetochloa italica* (L.) Scribn.
5. *P. crusgalli* =*Echinochloa crusgalli* (L.) Beauv.
P. crusgalli β =*Echinochloa crusgalli* (L.) Beauv. The long-awned form.
6. *P. dissectum* =*Paspalum dissectum* L.
7. *P. dimidiatum* =*Stenotaphrum dimidiatum* (L.) Brongn.
8. *P. sanguinale* =*Syntherisma sanguinalis* (L.) Dulac.
9. *P. filiforme* =*Syntherisma filiformis* (L.) Nash.
10. *P. compositum*=*Oplismenus compositus* (L.) Beauv.

---

[a] Agrost. *pl. 2. f. 2. F.* 1719.

[b] L. Sp. Pl. 55. 1753.

[c] Proc. Linn. Soc. Bot. **6**: 37. 1862.

[d] Zeitschr. Naturwiss. **79**: 39. 1907.

[e] Hamilt. Prodr. Pl. Ind. Occ. 11. 1825.

[f] Syst. Veg. **1**: 303. 1825.

[g] For a further discussion of the Linnæan species based upon American plants, see Hitchcock, Contr. Nat. Herb. **12**: 114. 1908.

PANICULATA.

11. *P. dichotomum.*
12. *P. clandestinum.*
13. *P. capillare.*
14. *P. patens.*
15. *P. dactylon* =*Capriola dactylon* (L.) Kuntze.
16. *P. miliaceum.*
17. *P. latifolium.*
18. *P. brevifolium.*
19. *P. arborescens*[a] =*P. brevifolium* L.
20. *P. virgatum.*

THE TYPE OF PANICUM.

As stated above, the historic type species of Panicum is *Chaetochloa italica*, the common foxtail millet. This is the plant to which the name Panicum was universally applied by Latin writers as far back as our record extends. As the idea of genera developed, botanists, until the time of Tournefort, included under the general name Panicum other species with a similar inflorescence. This author included several rather diverse species, but the one which he chose for his illustration and which we may consider his type was the same well-known plant, the Panicum of the ancients (*Chaetochloa italica*).

Another ancient name, Milium, was applied to a widely cultivated cereal (*Panicum miliaceum*), and later, as the idea of genera grew, the name was made to include the sorghums, and was thus used by Tournefort,[b] who, however, figured *P. miliaceum* as his type species.

Linnæus at first accepted these two genera in the historic sense, and the type of his Panicum, since he referred to Scheuchzer, was the plant now called *Chaetochloa viridis*. Later, however, his ideas underwent a change, until finally in 1753 he had united under the generic name Panicum the twenty species mentioned above, including, as will be seen, not only the historic type of Panicum and its allies, and another common species (*Echinochloa crusgalli*) referred to Panicum by Tournefort[b] and other pre-Linnæan botanists, but also several new species, and, most noteworthy of all, *Panicum miliaceum*, the type of the old genus Milium. He, however, still retained the name Milium for another genus (including *M. effusum* and *M. confertum*). Since no generic descriptions are given in the Species Plantarum, it is necessary to consult the first succeeding edition of the Genera Plantarum, namely the fifth, published in 1754. In this place Linnæus still credits the genus Milium to "Tournef. 298," though he has placed the species represented by the plate 298 under Panicum, and the other Tournefortian species of Milium under Holcus. But he has made one important alteration in the description, a comparison of which with the first edition shows the two to be identical except as to the statement concerning the calyx or glumes. In the first edition the diagnosis reads, "Gluma uniflora, trivalvis: Valvulis ovatis, acuminatis, duabus interioribus oppositis, tertia a tergo alterius posita;" in the fifth, "Gluma uniflora, bivalvis: Valvulis ovatis, acuminatis." By the change of *trivalvis* to *bivalvis* he has transferred the generic idea of Milium from *Panicum miliaceum* to *Milium effusum.*

---

[a] Trimen (Journ. Linn. Soc. Bot. **24**: 155. 1888.) states that this species, as described in Linnæus's Flora Zeylanica, upon which is based *P. arborescens* L., is *P. ovalifolium* Poir. (*P. brevifolium* L.), and that the specimen in the Linnæan Herbarium belongs to the same species. Mixed with the above-mentioned herbarium specimen is a fragment of an Arundinaria, which probably accounts for the specific name and the reference to its lofty stature.

[b] Inst. Rei Herb. 54. *pl. 298. f. L.* 1700.

It is now necessary to decide upon the type species of Panicum as presented in the Species Plantarum. There is nothing in this work to indicate which species Linnæus considered the type of the genus, but by taking into consideration the description of Panicum as given in the fifth edition of the Genera Plantarum we arrive at a partial interpretation of his ideas. In the latter work he describes the calyx (glumes and sterile lemma) and corolla (fertile lemma and palea) as follows: "Cal. Gluma uniflora, trivalvis: Valvulis ovato-acuminatis: tertia minima a tergo alterius posita. Cor. bivalvis: Valvulae ovato-acuminatae: altera minor planior." The description of the other parts has no significance, but at the end is a note which throws much light on the question under consideration. It reads: "Obs. Aristae terminant in quibusdam corollae valvulam planiorem. Species datur involucro polyphyllo capillari instructa." It is evident from this note that Linnæus did not consider as typical those species with awns or with an involucre, though he admitted them as exceptional. As awned species he had in mind particularly *Panicum crusgalli,* an old and well-known species illustrated by Scheuchzer; and as involucrate species he referred especially to his *Panicum glaucum* and *P. italicum.*

In accordance with the recent American Code of Botanical Nomenclature [a] the type is chosen, in the absence of other indications, by an application of Canon 15, section d, which reads: "Where economic or indigenous species are included in the same genus with foreign species, the type is to be selected from (1) the economic species or (2) those indigenous from the standpoint of the author of the genus." The only important economic species described by Linnæus are *Panicum americanum, P. italicum,* and *P. miliaceum,* to which might be added, as of much less importance, *P. dactylon.* It seems evident then, that, since Linnæus did not consider as typical those species having an involucre, the type is the remaining important economic species, namely, *Panicum miliaceum.*

It is unfortunate that Linnæus and succeeding botanists did not retain Panicum and Milium for the groups containing the historic and especially unfortunate that Beauvois did not retain the name Panicum for the group which he segregated as Setaria, and restore the name Milium for the group which he called Panicum. But since botanists have for one hundred and fifty years almost unanimously accepted the nomenclatorial idea of retaining the name Panicum for the group containing *P. miliaceum*, it would be unwise to alter the application of the names Panicum and Milium unless it becomes the consensus of botanical opinion that all generic names shall be based upon historic types. Aside from the nomenclatorial confusion arising from such a series of changes, we fear that the difficulties and uncertainties encountered in an attempt to establish a stable nomenclature on such a basis would be much greater than those that have arisen in applying the generic names in accordance with the American Code of Botanical Nomenclature, which arbitrarily fixes 1753 as the date from which priority shall be reckoned and allows the type of Linnæan genera to be selected from economic species.

---

[a] Bull. Torrey Club 34: 172. 1907.

HISTORY OF PANICUM AFTER 1753.

The second edition of Linnæus's Species Plantarum contains twenty-eight species of Panicum, including all except two of the original twenty. *Panicum dissectum* was removed to Paspalum, established by Linnæus in 1759, and *Panicum americanum* was transferred to Holcus as *H. spicatus*. In 1772 *Panicum sanguinale* was separated by Scopoli as *Digitaria sanguinalis*, and in the course of a few years other species of the first group, *Spicata*, were separated from Panicum and assigned to the genera Setaria, Echinochloa, Oplismenus, and others. *Panicum dactylon* was included by Linnæus in his second group, *Paniculata*, though the inflorescence is spicate as he himself describes, "Panicum spicis digitatis patentibus." This species was soon made the type of a new genus, Capriola Adans., and, later, of Cynodon Rich. Later authors have almost universally retained the name Panicum for the paniculate species, and often have included as sections Echinochloa and Digitaria.

Miller[a] reverts to the original use of the generic names Milium and Panicum, the former including, among other species, *M. panicum* (*Panicum miliaceum* L.) and *M. effusum* L., and the latter including *P. germanicum*, *P. italicum*, and three kinds of pearl millet (Pennisetum). Moench[b] and Adanson[c] also use Milium and Panicum in the pre-Linnæan sense, the former being credited to Tournefort (based on *Panicum miliaceum* L.) and the latter by Moench to Gaertner (who figures *Chaetochloa glauca*), and by Adanson to Plinius (who describes *Chaetochloa italica*).

---

[a] Gard. Dict. 1768.

[b] Meth. Pl. 1794.

[c] Fam. Pl. 1763.

GENERA HERE EXCLUDED.

The genus Panicum as accepted by Dalla Torre and Harms[a] includes a number of groups which in our treatment have been excluded. Of the twelve sections into which Panicum is there divided, the first eleven belong to allied genera, as do Streptostachys and Otachyrium of the twelfth section. Coleataenia Griseb. from South America, included in the twelfth section, is a true Panicum.

In addition to the groups mentioned above, several species referred by many authors to Eupanicum have been excluded.

Sacciolepis Nash[b] has been discussed by Chase.[c] This genus has been confused with Hymenachne Beauv. on account of the similarity in the form of the inflorescence, which is usually a spike-like panicle. The genus is chiefly distinguished by the saccate second glume and stipitate fruit.

Lasiacis (Griseb.) Hitchc. (Panicum, section Lasiacis Griseb.),[d] includes the woody, bamboo-like species with globose spikelets having a bony-indurated fruit, with a downy tuft at the apex, the palea gibbous above and concave toward the base. The type of this genus is **Lasiacis divaricata** (L.) Hitchc., based on *Panicum divaricatum* L., the type of Grisebach's section.

Panicum uncinatum Raddi[e] is here excluded from Panicum because of the distinctly different spikelets placed with the back of the fruit turned from the rachis, the narrow, aristate first glume as long as the spikelet, the large boat-shaped second glume beset with divergent, uncinate spines, the sterile floret large and having a subindurated lemma and palea, the fertile floret about two-thirds as large as the sterile one, the margin of the lemma not inrolled—a combination of characters showing a closer approach to Echinolaena than to Panicum.

Panicum aturense H. B. K.[f] is also here excluded, differing from Panicum as here limited in having equal glumes exceeding the subhyaline sterile lemma and a scarcely indurated fruit, the margins of the lemma thin and flat.

Panicum tuerckheimii Hack.,[g] of which we have seen but a single specimen (Tuerckheim's no. 8618, a duplicate type), is an anomalous species with spikelets in which the first glume is wholly wanting, and in which no rudiment of a palea is found in the sterile lemma.

The genus Lasiacis and the other species here excluded from Panicum will be separately considered in a subsequent paper.

---

[a] Gen. Siphonog. 13. 1900.

[b] Britton, Man. 89. 1901.

[c] Proc. Biol. Soc. Washington **21**: 6. 1908.

[d] Fl. Brit. W. Ind. 551. 1864.

[e] Agrost. Bras. 41. 1823.

[f] Nov. Gen. & Sp. **1**: 103. *pl. 33*. 1815.

[g] Allg. Bot. Zeitschr. **12**: 60. 1906.

GROUPING OF THE SPECIES.

The genus Panicum, as here limited, contains two groups sufficiently well marked to warrant their segregation as subgenera, namely, Paurochaetium and Dichanthelium. Nearly all the remaining species group themselves around the central idea of the genus as typified by *P. miliaceum.* In order to avoid assigning to the main portion of the genus a name of formal nomenclatorial significance, such as Eupanicum, this group is called true Panicum. There are five outlying species which show no close relationships with the others, but are not sufficiently distinct to be assigned generic rank. These are placed in a final group under "Miscellaneous Species." It is probable that a further study of the species in other parts of the world will indicate that at least some of these species may, together with extra North American allies, be placed in definite subgenera.

The group true Panicum and the subgenus Dichanthelium are susceptible of further division into minor groups, the names of which are the plurals of the characteristic species of each group. These names are not intended to be formal and should have no nomenclatorial standing. The term Angustifolia is used as if we were to say, *P. angustifolium* and its allies. A few tropical species of true Panicum remain ungrouped, as they have no near allies in North America, and there is no advantage in making a group for each species.

The groups of these two main divisions are arranged to represent our judgment as to their relationship, so far as this can be done in a lineal sequence. In true Panicum the first group, the Geminata, is furthest removed from the typical species, the inflorescence resembling that of Paspalum. The Capillaria, Diffusa, and Virgata, typical groups, are near the center of the series. In the same way, the Depauperata are an outlying group of Dichanthelium, the typical groups being the Dichotoma and Lanuginosa.

The species of each group are also arranged to represent their affinities, but it is impossible to indicate the difference in the degree of relationship. Some of the groups are manifestly more homogeneous than others. The group Geminata, for example, includes two closely allied species, *P. geminatum* and *P. paludivagum,* and one, *P. barbinode,* in which the affinity is less evident. The latter species is placed in the same group as the other two partly as a matter of convenience. If there were several other species more closely allied to this than to *P. geminatum* it would have been more convenient to segregate these as a separate group. One more example will suffice to illustrate the unequal value of the groups. *Panicum reptans* is placed in the group Fasciculata because it is more closely allied to the other species of that group than to those of any other group, yet the degree of difference between this and any other species of the group is much greater than that between such species as *P. fasciculatum*, *P. arizonicum*, and *P. adspersum*. But other groups, such as the Lanuginosa, are made up of closely allied species, connected with one another by intergrades, to form a composite taxonomic network whose component parts cannot be definitely distinguished by clean-cut lines of demarcation.

DESCRIPTION OF THE GENUS AND SPECIES.

PANICUM L.

Panicum L. Sp. Pl. 55. 1753.

Steinchisma Raf. Bull. Bot. Seringe 220. 1830.[a]

Phanopyrum (Raf.) Nash in Small, Fl. Southeast. U. S. 104. 1903.[b]

Spikelets articulated below the glumes, falling entire, more or less compressed dorsoventrally, arranged in panicles, rarely in racemes; glumes two, herbaceous, nerved, usually very unequal, the first often minute, the second typically equaling the sterile lemma, the latter of the same texture and simulating a third glume, bearing in its axil a membranaceous or hyaline palea and sometimes a staminate flower, the palea rarely wanting; fertile lemma chartaceous-indurated, typically obtuse, the nerves obsolete, the margins inrolled over an inclosed palea of the same texture, a lunate line of thinner texture at the back just above the base, the radicle protruding through this at germination; stamens three, styles two, stigmas plumose; grain dorsoventrally compressed, with a punctiform hilum, free within the firmly closed lemma and palea.

Annual or perennial herbaceous grasses, of various habit, confined to the warmer regions of both hemispheres.

A number of species here included in the genus Panicum depart in some measure from these generic characters. The subgenus Paurochaetium approaches Chaetochloa Scribn. and the group hitherto referred to Panicum section Ptychophyllum A. Br., in that the uppermost spikelet of each branchlet is subtended by a bristle-like prolongation of the axis. *Panicum geminatum* Forsk. and *P. paludivagum* Hitchc. & Chase have a racemose inflorescence as in Brachiaria Griseb., but the spikelets are placed with the back of the fruit turned toward the rachis as in true Panicum, not in the reverse position as in Brachiaria. In *P. barbinode* Trin., *P. arizonicum* Scribn. & Merr., and *P. texanum* Buckl. spikelets toward the ends of the branches are often placed in the reverse position characteristic of Brachiaria, while others on the same branch are placed with the back of the fruit toward the axis, showing that in an inflorescence not strictly racemose this character of the position of the spikelets in relation to the axis is not of taxonomic significance, since it depends on whether one or the other of a pair of spikelets on a one-flowered branchlet has been developed. Hence this character, while distinguishing between Paspalum L. on the one hand and Axonopus Beauv. and Brachiaria Griseb. on the other, does not alone clearly separate the latter from Panicum, but must be taken in connection with the strictly racemose inflorescence. In *Panicum elephantipes* Nees the thin but not hyaline margins of the acuminate lemma are not inrolled above the middle, the fruit thus suggesting an approach to Valota Adans., but in texture it is not cartilaginous and papillose as in that genus nor does *P. elephantipes* approach Valota in habit or inflorescence. In the Verrucosa and the related Trichoidia the firm-margined lemmas are not inrolled except at the base.

---

[a] See discussion under *P. hians*, p. 118.

[b] See discussion under *P. gymnocarpon*, p. 327.

The first glume in this genus is typically not more than half the length of the spikelet, and is commonly much shorter than this, but in a few species, as in *P. glutinosum* Swartz, *P. urvilleanum* Kunth, and in most of those included under "Miscellaneous Species" the first glume is nearly as long as the second. All the outlying species at the end, nos. 192 to 196, depart in some particular from typical Panicum, such departure being discussed under each species.

KEY TO SPECIES AND GROUPS.

- Axis of branchlets extending beyond the base of the uppermost spikelet as a point or bristle 1 to 6 mm. long..See subgenus Paurochaetium, p. 22.
- Axis of branchlets not extending into a bristle. (In *P. geminatum* and *P. paludivagum* the somewhat flattened axis pointed but not bristle-form.)
  - Plants annual.
    - Inflorescence consisting of several more or less secund spike-like racemes.
      - Fruit smooth and shining; spikelets about 1.5 mm. long.
        - Rachis bearing slender bristles (these wanting in exceptional specimens); nodes usually villous.. 59. *P. pilosum.*
        - Rachis without bristles; nodes glabrous............ 60. *P. laxum.*
      - Fruit transversely rugose; spikelets 2 mm. or more long ....See Fasciculata, p. 35.
    - Inflorescence a more or less diffuse panicle.
      - Spikelets tuberculate................................See Verrucosa, p. 126.
      - Spikelets not tuberculate.
        - Spikelets 1.2 to 1.4 mm. long; tropical species......See Trichoidia, p. 129.
        - Spikelets 1.7 mm. or more long.
          - Glumes and sterile lemma hispid along the margins.................................... 76. *P. costaricense.*
          - Glumes and sterile lemma glabrous.
            - First glume not over one-fourth the length of the spikelet, truncate or triangular-tipped.....See Dichotomiflora, p. 47.
            - First glume usually as much as one-half the length of the spikelet, acute or acuminate..See Capillaria, p. 54.
  - Plants perennial.
    - Spikelets short-pediceled along one side of the rachises, forming spike-like racemes.
      - First glume nearly equaling the sterile lemma.
        - Racemes spreading; fruit not over one-third the length of the spikelet........................196. *P. gymnocarpon.*

Racemes appressed; fruit nearly as long as the spikelet.

Spikelets silky-villous, pointed.................... 194. *P. ciliatissimum.*

Spikelets glabrous, obtuse.......................... 192. *P. obtusum.*

First glume much shorter than the sterile lemma.

Spikelets hispid and with two crateriform glands on the sterile lemma.

Spikelets not over 2 mm. long; blades not over 4 cm. long.................................. 66. *P. pulchellum.*

Spikelets 3.6 mm. long; blades 4 to 10 cm. long.. 67. *P. biglandulare.*

Spikelets glabrous.

Blades lanceolate to ovate-lanceolate; glumes strongly carinate; spikelets 2.3 to 2.8 mm. long; tropical species.

Blades not over 5 cm., usually 2 to 3 cm. long; second glume rather blunt and shorter than the sterile lemma......................... 64. *P. stoloniferum.*

Blades 5 to 11 cm. long; second glume acute, but slightly shorter than the sterile lemma..... 65. *P. frondescens.*

Blades linear, often elongated; glumes not carinate or but slightly so.

Spikelets not over 1.5 mm. long.

Spikelets pointed, not expanded at maturity by an enlarged sterile palea............. 58. *P. polygonatum.*

Spikelets blunt, expanded at maturity by the enlarged sterile palea.

Rachis bearing slender bristles (these wanting in exceptional specimens); nodes usually villous....................... 59. *P. pilosum.*

Rachis without bristles; nodes glabrous.... 60. *P. laxum.*

Spikelets 2.5 mm. or more long.

Axis pilose................................ 57. *P. longum.*

Axis not pilose.

Fruit transversely rugose.................See GEMINATA, p. 30.

Fruit not rugose..........................193. *P. hemitomon.*

Spikelets in open or sometimes in contracted or congested panicles, but not in spike-like racemes.

Basal leaves usually distinctly different from those of the culm, forming a winter rosette; culms at first simple, the spikelets of the primary panicle not perfecting seed, later usually becoming much branched, the small secondary panicles with cleistogamous, fruitful spikelets............See subgenus DICHANTHELIUM, p. 142.

Basal leaves similar to culm leaves, not forming a winter rosette; spikelets all fertile.

Fruit transversely rugose.........................See MAXIMA, p. 78.

Fruit not transversely rugose (minutely papillose-roughened in *P. millegrana*).

First glume very small, not over one-fourth the length of the small, obovate, blunt spikelet; tropical species. (See also *P. repens* with pointed spikelets)........................See PARVIGLUMIA, p. 124.

First glume as much as one-third the length of the spikelet (shorter in *P. repens*).

Spikelets pubescent.

Fruit silky-villous; spikelets 6 to 7 mm. long, densely villous........................ 75. *P. urvilleanum.*

Fruit smooth and shining; spikelets not over 3.5 mm. long.

Culms and sheaths glabrous or softly pubescent; blades ovate-lanceolate.......... 78. *P. millegrana.*

Culms and sheaths densely harshly villous; blades linear.......................... 80. *P. rudgei.*

Spikelets glabrous.

Sterile palea enlarged and indurated at maturity, expanding the spikelet; blades scarcely wider than their sheaths.

Spikelets 3 mm. long, congested; panicles dark purple.......................... 63. *P. cupreum.*

Spikelets not over 2.4 mm. long; panicles green or pale.

Panicle branches spikelet or branchlet-bearing along the upper half or toward the ends only...................... 62. *P. hians.*

Panicle branches branchlet - bearing throughout their length or nearly so. 61. *P. exiguiflorum.*

Sterile palea, if present, not enlarged and indurated.

Plants forming conspicuous creeping, scaly rootstocks.

Spikelets long - pediceled, not secund, arranged in open or contracted panicles ....See VIRGATA, p. 84.

Spikelets short-pediceled, more or less secund along the nearly simple panicle branches.

Panicles open; spikelets 3.4 to 3.8 mm. long (shorter in exceptional specimens)...................... 55. *P. anceps.*

Panicles more or less contracted; spikelets not over 2.8 mm. long......... 56. *P. rhizomatum.*

Plants not forming creeping, scaly rootstocks.

Fruit crested at the apex; spikelets 5.5 to 6 mm. long; tropical species..........195. *P. zizanioides.*

Fruit not crested.

- Panicles narrow and few-flowered; culms erect and wiry; blades drying involute .... See TENERA, p. 97.
- Panicles open or contracted, many-flowered.
  - Panicles 40 to 60 cm. long, the numerous elongated branches in verticils; tropical species .... 81. *P. megiston*.
  - Panicles mostly much less than 40 cm. long; branches not verticillate.
    - Spikelets short-pediceled along the nearly simple panicle branches. See AGROSTOIDIA, p. 99.
    - Spikelets long-pediceled; panicle open (dense in *P. hirsutum*).
      - Spikelets viscid; first glume about as long as the second; tropical species .... 79. *P. glutinosum*.
      - Spikelets not viscid; first glume much shorter than the second.
        - Culms erect or rarely spreading; blades linear, usually elongated; spikelets pointed.. See DIFFUSA, p. 71.
        - Culms decumbent at base; blades ovate to oblong-lanceolate; spikelets blunt; tropical species.
          - Panicles mostly less than 5 cm. long; plants glaucous. 77. *P. parvifolium*.
          - Panicles 10 to 20 cm. long; plants not glaucous...... 78. *P. millegrana*.

Subgenus PAUROCHAETIUM subgen. nov.

Perennials; culms tufted, erect, blades not over 7 mm. wide; inflorescence narrow, more or less interrupted, the branches short and appressed, the ultimate branchlets bearing 1 to several spikelets, produced beyond the uppermost spikelet as a bristle 1 to 6 mm. long; spikelets 1.5 to 3.5 mm. long, much swollen on the face, glabrous; fruit transversely rugose, apiculate.

The type species is *P. distantiflorum* Michx.

This group approaches Chaetochloa in having branchlets produced into bristles, and in the shape of the spikelets and rugose fruits.

- Blades elongated, usually more than 15 cm. long, narrowed toward the base.
  - Spikelets about 3.5 mm. long.......................... 5. *P. reverchoni*.
  - Spikelets about 2 mm. long, or less.
    - First glume rounded or truncate; second glume about as long as fruit.............................. 3. *P. chapmani*.

First glume acute, second glume about two-thirds as long as fruit.
  Spikelets 1.5 mm. long; blades involute........ 1. *P. distantiflorum.*
  Spikelets 2 mm. long; blades scarcely involute.. 2. *P. utowanaeum.*
Blades usually less than 10 cm. long, not narrowed toward the base; spikelets 2.5 to 3 mm. long.
  Blades of mid-culm long-acuminate, usually 2 to 3 mm. wide.. 4. *P. ramisetum.*
  Blades of mid-culm abruptly acute, usually 4 to 6 mm. wide.. 6. *P. firmulum.*

1. **Panicum distantiflorum** Rich.

Panicum distantiflorum Rich. in Sagra, Hist. Cuba **11**: 304. 1850. "Crescit in graminosis montosis insulae Cubae." The type in the Paris Herbarium is labeled "in montosis ins. Cubae," and was received from Sagra. In the same herbarium is a specimen of *Panicum megiston* Schult., from Cayenne, which bears a slip with the name "*Panicum distantiflorum,*" accompanied by a diagnosis and drawings of spikelets. The diagnosis and drawings apply to the Cuban specimen and not to the very different Cayenne specimen. It would appear that the drawings had been attached to the wrong sheet.

DESCRIPTION.

Plants cespitose, glabrous; culms 60 to 80 cm. high, slender, wiry, compressed, producing slender, sometimes fascicled branches from all the nodes; sheaths longer than the internodes, but narrow and sheathing the joints only at the base, flattened, a minute tuft of hairs on the auricles; ligule a ring of very short hairs; blades erect, firm, narrower than the summit of the sheath, linear to almost capillary, as much as 30 cm. long, 1 to 2 mm. wide, mostly strongly involute, at least the lower commonly more or less curled, usually with a few hairs at the base; panicles numerous, 2 to 7 cm. long, very narrow, the branches appressed, scarcely overlapping, the lower 8 to 15 mm. long, the branchlets bearing 1 to 3 subsessile spikelets, the setiform prolongation of the axis rarely equaling the spikelet, usually not more than 1 mm. long; spikelets 1.5 mm. long, 0.7 mm. wide, ellipsoid, acute, glabrous; first glume about half as long as the spikelet, acute, strongly 5-nerved; second glume obtuse, two-thirds to three-fourths as long as the fruit and the strongly 7-nerved, acute, sterile lemma; fruit 1.3 mm. long, 0.6 mm. wide, elliptic, pointed, finely rugose.

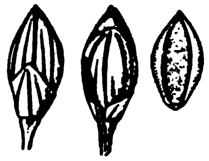


FIG. 1.—*P. distantiflorum.* From type specimen.

DISTRIBUTION.

Open rocky soil, Bahamas and Cuba; apparently rare.

BAHAMAS: Inagua, *Hitchcock* in 1890, *Nash & Taylor* 893 (both in Field Mus. Herb.).

CUBA: Playa de Cojimar, near Habana, *Hitchcock* 144; Colombia near Habana, *León* 305b, 567; Santiago de Cuba, *León* 912, 917; Playa de Marianao, *León* in 1909.

2. **Panicum utowanaeum** Scribn.

Panicum utowanaeum Scribn. in Millsp. Field Columb. Mus. Bot. **2**: 25. 1900. "No. 702 [Millspaugh Plant. Utowan.], from a dry hillside near Guanica, Porto Rico, Jan. 22, 1899. Type in Field Col. Mus. Herb. No. 60702." In this specimen the rootstock is scarcely visible, but in the duplicate in the National Herbarium the slender rootstock is shown.

Panicum sintenisii Nash, Bull. Torrey Club **30**: 382. 1903. "In woods, Guanica, Sintenis 3463." The type, in the herbarium of the New York Botanical Garden, is labeled "Guanica, in sylva ad Cerro de la Ensenada, Porto Rico. Sintenis 3463, Jan. 28, 1886." The specimen shows only a trace of the slender rootstock.

DESCRIPTION.

Plants tufted from the joints of short, slender rootstocks, glabrous; culms ascending or somewhat spreading, 25 to 60 cm. high, slender, compressed, sparingly branching; sheaths shorter than the internodes, compressed, especially the lowermost, ciliate at the auriculate summit; ligule a minute ring of stiff hairs; blades erect or spreading above, 10 to 20 cm. long, 1 to 4 mm. wide, slightly scabrous on the margin (sometimes sparsely pilose on the upper surface at the base), narrowed and more or less involute at the base and much narrower than the sheath; panicles 3 to 10 cm. long, very slender, the scattered, erect branches 1 to 3 cm. long, the bristle usually equaling or exceeding the spikelet; spikelets subsessile, 2 to 2.1 mm. long, 0.6 to 0.7 mm. wide, elliptic, somewhat beaked at the summit, glabrous, pale with green nerves; first glume half as long as the spikelet, acute, 3-nerved; second glume two-thirds to three-fourths as long as the fruit, 3 to 5-nerved, sterile lemma 5-nerved, abruptly pointed; fruit 1.9 mm. long, 0.6 mm. wide, elliptic, minutely rugose; slightly beaked at the acute apex.

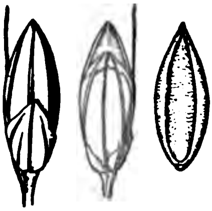


FIG. 2.—*P. utowanaeum*. From type specimen.

This species is closely allied to *P. distantiflorum*, but may be distinguished from it by the wider, flat or scarcely involute blades and larger, pale, less strongly nerved spikelets. The rootstock is very slender and so easily broken off in collecting that only about half the specimens cited below show it.

DISTRIBUTION.

Open rocky soil, mostly near the coast, Cuba, Porto Rico, and Guadeloupe.

CUBA: Triscornia, near Habana, *Hitchcock* 141, *Tracy* 9089; without locality, *Wright* 3452 (Gray Herb.).

PORTO RICO: Guanica, *Millspaugh* Pl. Utow. 702, *Sintenis* 3365, 3416, 3463 (N. Y. Bot. Gard. Herb.).

LEEWARD ISLANDS: Guadeloupe, *Duss* 3177.

3. **Panicum chapmani** Vasey.

Panicum chapmani Vasey, Bull. Torrey Club **11**: 61. 1884. No locality nor specimen is cited, but the author says: "This is the *Panicum tenuiculmum* of Chapman's Flora, but is not the *P. tenuiculmum* of Meyer." A specimen in the National Herbarium from the Chapman Herbarium labeled "Panicum tenuiculmum S. Fl. S. Florida" in Chapman's hand, and "Panicum Chapmani Vasey," in Vasey's hand, is chosen as the type.

DESCRIPTION.

Plants cespitose, glabrous; culms ascending or spreading, 40 cm. to 1 meter high, slender, compressed, wiry, sparingly branching; sheaths about as long as the internodes, compressed, pubescent at the scarcely auriculate summit, sometimes ciliate on the margin; ligule a ring of very short hairs; blades erect, rather firm, linear, 15 to 40 cm. long, 2 to 5 mm. wide, acuminate, narrowed to the base, more or less involute when dry, scabrous on the margin and upper surface, the latter usually sparsely pilose toward the base; panicles elongated, sometimes as much as 30 cm. long, of remote, appressed, raceme-like branches bearing few to several subsessile, somewhat crowded spikelets, the setiform prolongation of the axis 3 to 6 mm. long; spikelets 2 to 2.2 mm. long, 1 to 1.2 mm. wide, obovate, abruptly pointed, turgid, pale green or yellowish; first glume about one-third the length of the spikelet, obtuse or truncate, 3-nerved; second glume slightly shorter than the fruit and sterile lemma, strongly 5 to 7-nerved, obscurely reticulated; fruit 1.8 mm. long, 1 to 1.1 mm. wide, elliptic, abruptly acute, minutely rugose, the margins of the lemma inrolled only at base.

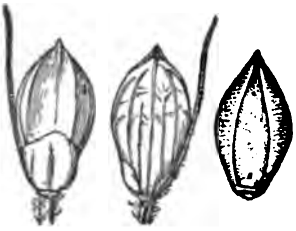


FIG. 3.—*P. chapmani.* From type specimen.

As observed on Key Largo the blades in this species are flat on plants growing in shaded situations and involute on plants in the sun. The flat blades become more or less involute in drying.

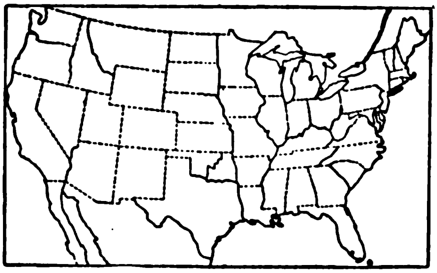


FIG. 4.—Distribution of *P. chapmani.*

DISTRIBUTION.

Coral sand and shell mounds, southern Florida and the Bahamas.

FLORIDA: Marco, *Hitchcock* Lee Co. Pl. 487; Cape Sable, *Simpson* 157; Key Largo, *Chase* 3926, *Curtiss* 5457; Little Pine Key, *Curtiss* 3607; Key West, *Garber* in 1877; "Shores of Manettee River,"[a] *Rugel* 394; without locality, *Blodgett*, *Chapman.*

BAHAMAS: New Providence, *Britton & Brace* 401; Rose Island, *Britton & Millspaugh* 2137; Great Exuma, *Britton & Millspaugh* 3076 (all in Field Mus. Herb.).

4. Panicum ramisetum Scribn.

Panicum subspicatum Vasey, U. S. Dept. Agr. Div. Bot. Bull. **8**: 25. 1889, not Desv. 1831. "Texas (Buckley, Nealley)." Both specimens cited by Vasey are in the National Herbarium. The second of these has been chosen as the type for the following reasons: The first specimen cited, S. B. Buckley in 1881, does not bear the specific name in Vasey's hand, and furthermore is a mixture of *P. ramisetum* and *P. reverchoni;* the second specimen, collected in Texas by G. C. Nealley in 1887, bears the specific name, "subspicatum V." in Vasey's hand. Another Nealley specimen bears the name in Vasey's hand, but was collected in 1892, after the publication of the species.

Panicum ramisetum Scribn. U. S. Dept. Agr. Div. Agrost. Circ. **27**: 9. 1900. Based on *Panicum subspicatum* Vasey, not Desv.

---

[a] This locality, if meant for Manatee River, is probably an error.

DESCRIPTION.

Plants pale green, tufted, from short horizontal rootstocks; culms erect or ascending, 25 to 60 cm. high, commonly branching at the base and lower nodes, scabrous at least below the nodes; sheaths nearly as long as the internodes or the lower overlapping, not compressed, sparingly papillose-pilose, especially along the margins and at the summit; ligule about 1 mm. long, with longer hairs at the sides; blades rather firm, erect or ascending, 5 to 12 cm. long, the lower shorter and more spreading, 2 to 4 mm. wide, tapering to an involute tip, not narrowed at base, but about as broad as the sheath, sparsely papillose-pilose on both surfaces, at least toward the base; sometimes sparsely ciliate; panicles very slender, 5 to 20 cm. long, not conspicuously interrupted, their branches erect, the ultimate branchlets of 1 to 4 subsessile spikelets, the setiform prolongation of the axis usually not exceeding the short-pediceled spikelet; spikelets 2.4 to 2.6 mm. long, 1.4 to 1.5 mm. wide, obovate, subacute, turgid, plano-convex; first glume clasping, about half the length of the spikelet, subacute or acute, 5-nerved; second glume and sterile lemma subequal, scarcely covering the fruit at maturity, strongly 7 to 9-nerved; fruit 2.2 to 2.3 mm. long, 1.4 mm. wide, elliptic, acute.

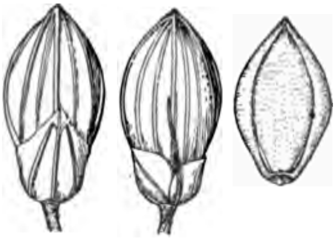


FIG. 5.—*P. ramisetum.* From type specimen.

DISTRIBUTION.

Sandy plains and prairies, southern Texas and northern Mexico.

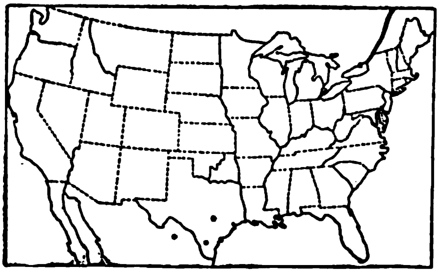


FIG. 6.—Distribution of *P. ramisetum.*

TEXAS: Big Springs, *Tracy* 7958, 8229; Kingsville, *Tracy* 8879; Encinal, *Griffiths* 6380; Laredo, *Nealley* in 1891, *Pringle* 2377, *Sauvignet* in 1891; Eagle Pass, *Havard* 98; San Diego, *Nealley* 62, *Smith* in 1897; without locality, *Buckley* in 1881, *Nealley* in 1887, 1888, 1889, and 1892.

MEXICO: State of Coahuila, near Diaz, *Pringle* 8323.

5. **Panicum reverchoni** Vasey.

Panicum reverchoni Vasey, U. S. Dept. Agr. Div. Bot. Bull. 8: 25. 1889. "Texas (Reverchon)." The type, in the National Herbarium, was collected by J. Reverchon, near Dallas, Texas, and distributed in "Curtiss, North American Plants No. I," as *Setaria uniseta* Fourn.

DESCRIPTION.

Plants tufted from short rootstocks, branching at the base; culms stiffly erect, 30 to 70 cm. high, simple or occasionally bearing one or two sterile branches, slender, subcompressed, glabrous or the lower internodes strigose, the nodes appressed-pubescent; sheaths mostly longer than the internodes, ciliate on the margin toward the summit, otherwise glabrous, often slightly scabrous, or the lowermost sometimes sparsely strigose; ligule about 0.3 mm. long; blades erect, stiff, 5 to 20 cm. long, 2 to 3 mm. wide, flat or involute toward the apex and base (the blades of the basal shoots commonly involute-setaceous), scabrous on both surfaces, especially the upper, at the base narrower than the sheath, the lower commonly disarticulating at this point; panicles

long-exserted, very slender, 5 to 20 cm. long, the branches scattered, short, erect, the branchlets bearing 1 or 2 subsessile spikelets, the setiform prolongation of the axis mostly equaling or exceeding the spikelet; spikelets 3.5 to 3.8 mm. long, 1.8 to 2 mm. wide, elliptic, turgid, abruptly pointed; first glume about half the length of the spikelet, subacute, strongly 5 to 7-nerved; second glume and sterile lemma scarcely equaling the fruit, strongly 5 to 7-nerved; fruit 3.1 to 3.3 mm. long, 1.8 to 1.9 mm. wide, elliptic, minutely pointed, obscurely transversely rugose.

This species differs from *P. ramisetum* in having longer, narrower blades, narrower at the base than the summit of the sheath, and larger spikelets, commonly but one to a branchlet, hence most of the spikelets subtended by a bristle.

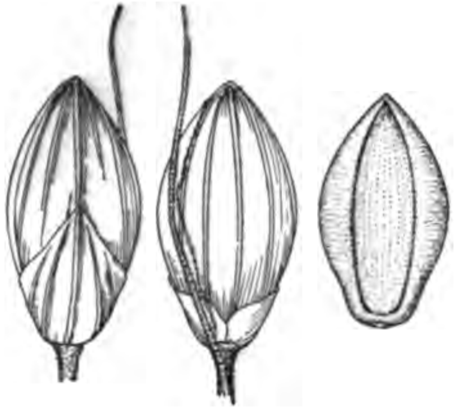


FIG. 7.—*P. reverchoni*. From type specimen.

DISTRIBUTION.

Rocky or sandy prairies and limestone hills, Texas.

TEXAS: Dallas, *Bebb* 1321, *Bush* 674, *Reverchon* 1096, in Curtiss N. Amer. Pl. 3618*, L; Abilene, *Tracy* 7940; Colorado, *Tracy* 7939; Weatherford, *Tracy* 7948; Kerrville, *Heller* 1603; Gillespie County, *Jermy* 39; Bexar County, *Jermy* 233, 234; San Antonio, *Jermy;* southwest Texas, *Nealley* in 1890; without locality, *Wright* 792.

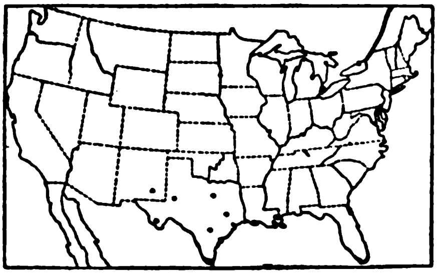


FIG. 8.—Distribution of *P. reverchoni*.

6. **Panicum firmulum** sp. nov.

DESCRIPTION.

Plants light olive green, rather loosely tufted, ascending or decumbent at base, from creeping knotted rootstocks as much as 5 cm. long; culms 30 to 40 cm. high, simple or with a few appressed branches, glabrous, the nodes glabrous or strigose; sheaths overlapping, striate, papillose-pubescent, papillose only, or nearly glabrous, a tuft of stiff hairs 3 mm. long on the sides at the summit; ligule dense, about 1.5 mm. long; blades ascending or spreading, firm, 4 to 10 cm. long, the lower shorter and more spreading, 4 to 7 mm. wide, abruptly acuminate, rounded at the base and wider than the sheath, sparsely papillose-ciliate, at least toward the base, scabrous on the upper surface; panicles slender, interrupted, their branches erect,

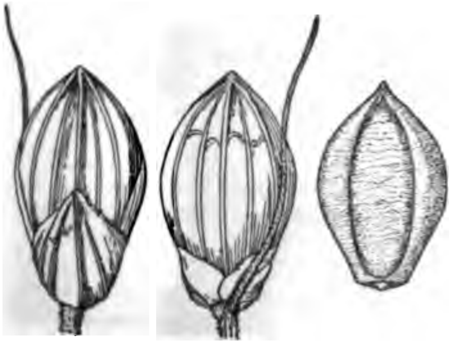


FIG. 9.—*P. firmulum*. From type specimen.

the branchlets bearing 1 to 3 short-pediceled spikelets, the setiform prolongation of the axis usually about as long as the spikelets, sometimes twice as long; spikelets 3 to 3.2 mm. long, 1.7 to 1.8 mm. wide, obovate, subacute, turgid, strongly nerved; first glume clasping, half the length of the spikelet, pointed, 5 to 7-nerved; second glume and sterile lemma subequal, scarcely covering the fruit, 5 to 7-nerved, the glume obscurely reticulated toward the summit; fruit 2.7 to 2.8 mm. long, 1.6 to 1.7 mm. wide, obovate-elliptic, abruptly acute, very turgid.

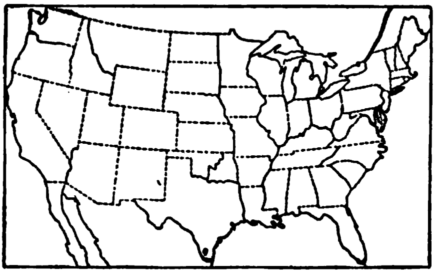


FIG. 10.—Distribution of *P. firmulum*.

Type U. S. National Herbarium no. 592755, collected May 27, 1904, Elsordo, Zapata County, Texas, by David Griffiths (no. 6446).

This species resembles *P. ramisetum*, from which it differs in the larger spikelets, usually longer setæ, broader, more or less ciliate blades, and markedly knotty rootstock.

DISTRIBUTION.

Sandy prairies, southern Texas.

TEXAS: Elsordo, *Griffiths* 6446; Sarita, *Hitchcock* 3866; without locality, *Nealley*.

TRUE PANICUM.

SYNOPSIS OF GROUPS.

- Inflorescence consisting of several spike-like racemes along a main axis; fruit transversely rugose.
  - Perennials; culms spreading or creeping; spikelets glabrous .... GEMINATA (p. 30).
  - Annuals; spikelets pubescent or glabrous .... FASCICULATA (p. 35).
- Inflorescence an open or contracted panicle, or if with racemose branches fruit not transversely rugose.
  - Annuals; panicles open, usually diffuse. (See also Laxa and *P. costaricense* no. 76.)
    - Spikelets glabrous, not warty nor rugulose; fruit polished.
      - First glume less than one-fourth the length of the spikelet, obtuse or truncate; sheaths glabrous except in *P. bartowense* .... DICHOTOMIFLORA (p. 47).
      - First glume nearly half the length of the spikelet or more; sheaths hispid (sometimes glabrous in *P. decolorans* and *P. stramineum*) .. CAPILLARIA (p. 54).
    - Spikelets warty, rugulose, or hispid; fruit not polished, margins of lemma not inrolled.
      - Spikelets 2 mm. or more long; not tropical species. VERRUCOSA (p. 126).
      - Spikelets not over 1.4 mm. long; tropical species. TRICHOIDIA (p. 129).
  - Perennials (two species in Laxa annuals).
    - Fruit transversely rugose (very faintly so in *P. plenum*); spikelets ellipsoid, glabrous; plants robust .... MAXIMA (p. 78).
    - Fruit not transversely rugose.
      - Spikelets densely silky-villous, 6 to 7 mm. long; lemma silky on the margins .... URVILLEANA (p. 132).

- Spikelets not silky-villous.
  - Panicles more or less diffuse (somewhat contracted in *P. hirsutum* and *P. gouini*); the spikelets not short-pediceled along raceme-like branches.
    - Spikelets pointed, glabrous; culms terete.
      - Rootstocks wanting; sheaths usually hirsute...................... DIFFUSA (p. 71).
      - Rootstocks present; sheaths glabrous...................... VIRGATA (p. 84).
    - Spikelets obtuse and glabrous or pointed and sparsely hispid............... See ungrouped tropical species, nos. 76 to 81.
  - Panicles more or less contracted, or the spikelets short-pediceled along the main branches.
    - First glume usually about one-fifth the length of the rounded-obtuse spikelets; tropical species........ PARVIGLUMIA (p. 124).
    - First glume usually more than one-third the length of the acute spikelets (subobtuse in *P. stenodes* and certain species of Laxa).
      - Culms erect or stiffly ascending, not geniculate; sterile palea not enlarged at maturity; panicle branches not conspicuously raceme-like; blades linear.
        - Panicles few-flowered; contracted; sterile palea not enlarged at maturity .... TENERA (p. 97).
        - Panicles many-flowered, open or contracted; the short-pediceled, pointed spikelets often secund........ AGROSTOIDIA (p. 99).
      - Culms often decumbent or more or less geniculate, if stiff and erect the sterile palea enlarged at maturity; panicle branches raceme-like (except in *P. hians* and *P. exiguiflorum*).
        - Second glume and sterile lemma boat-shaped or the latter bearing two crateriform glands; spikelets glabrous or pubescent............ STOLONIFERA (p. 120).
        - Second glume and sterile lemma not boat-shaped (or the glume but slightly so) nor gland-bearing; spikelets glabrous or scabrous at the apex only.......... LAXA (p. 110).

Geminata.—Perennials; culms tall, spreading or creeping; inflorescence consisting of several erect, spike-like racemes distributed along an elongated axis; spikelets secund, glabrous, fruit more or less transversely rugose or roughened. Growing in water or wet places.

Nodes bearded.. 9. *P. barbinode.*
Nodes glabrous.
  Spikelets 3 mm. long; glumes and sterile lemma papery..... 8. *P. paludivagum.*
  Spikelets not over 2.4 mm. long; glumes and sterile lemma
    not papery.. 7. *P. geminatum.*

7. Panicum geminatum Forsk.

Panicum geminatum Forsk. Fl. Aegypt. Arab. 18. 1775. "Rosettae in pratis ad littora Nili." We have not seen the type of this, but the description applies to the American plant which appears to be the same as the Old World species. We are informed by Mr. A. B. Rendle that the type is not in the herbarium of the British Museum.

Paspalum appressum Lam. Tabl. Encycl. **1:** 176. 1791. "Ex America merid. *Com. D. Richard.*" We have not seen the type specimen.

Digitaria appressa Pers. Syn. **1:** 85. 1805. Based on *Paspalum appressum* Lam.

? Digitaria affinis Roem. & Schult. Syst. Veg. **2:** 470. 1817. "In *Santa Fé de Bogota*. Ab amiciss. *Zea* nobiscum communicata." This specimen has not been examined, but the form to which Nees[a] and Trinius refer Roemer and Schultes's name, as shown by a specimen from Bahia in the Trinius Herbarium sent by Nees, is the one here described. Roemer and Schultes's description leaves the species in doubt, however, since it would only apply to an unusually small specimen and may possibly refer to a different species from that to which Nees and Trinius applied the name.

Panicum beckmanniaeforme Mikan; Trin. in Spreng. Neu. Entd. **2:** 83. 1821. "*Hab.* in Brasilia." A portion of the type is in the Trinius Herbarium. It is from Brazil sent by Mikan.

Panicum truncatum Trin. Gram. Pan. 130. 1826. The author states he has seen specimens from "Ind. or., Egypt (LINDLEY. SIEBER in hb. Maur. I. I. no. 28.) e Brasil.—s. nom. *Panic. affine Schult.*—N. AB ESENB." The specimen figured in the Icones[b] is from Egypt. The specimen has not been examined, but the plate shows the species to be the same as the above-mentioned specimen sent by Nees under the name of *P. affine* Schult.

? Panicum affine Nees, Agrost. Bras. 113. 1829. Among several other names "*Digitaria affinis* R. & Sch." is cited as a synonym. Since this specific name is retained, this is considered as based on *Digitaria affinis* Roem. & Schult., though Nees's description is evidently based on the specimen first cited, one collected by Martius in Bahia, Brazil, and preserved in the Munich Herbarium, and belonging to the species here described.

Panicum brizaeforme Presl, Rel. Haenk. **1:** 302. 1830. "*Hab. in Luzonia.*" The type, in the herbarium of the German University at Prague, is labeled "Acapulco. Haenke." The specimen in the Bernhardi Herbarium at the Missouri Botanical Garden, which is the same species, is from Luzon.[c]

Panicum carnosum Salzm.; Steud. Syn. Pl. Glum. **1:** 60. 1854. This is mentioned as a synonym under *P. paspaloides*, with the citation "Hrbr. Bahia." There is a specimen of this collection in the Trinius Herbarium and another in the United States National Herbarium.

---

[a] *Panicum affine* Nees, Agrost. Bras. 113. 1829.

[b] Trin. Gram. Icon. **2:** *pl. 168*. 1829.

[c] Scribner, Rep. Mo. Bot. Gard. **10:** 46. 1899.

Panicum glomeratum Buckl. Prel. Rep. Geol. Agr. Surv. Tex. App. 3. 1866, not Moench, 1794. "Western Texas." The type, in the herbarium of the Philadelphia Academy, is a single culm; the turgid spikelets are 2.3 mm. long.

Panicum appressum Lam.; Doell in Mart. Fl. Bras. **2**^{2}: 184. 1877, not Forsk. 1775. Based on *Paspalum appressum* Lam.

This species has usually been called *P. paspalodes* Pers.[a] The latter, however, is based on *P. brizoides* Lam.,[b] not L.[c] The published locality for *Panicum brizoides* Lam. is "India." The type, in the Paris Herbarium, is labeled "herb. certo i. de France [Mauritius] Commerson." It belongs to the species described by Hooker[d] as *P. punctatum* Burm.,[e] to which, however, Burmann's description does not well apply.

DESCRIPTION.

Plants glabrous throughout; culms cespitose, usually numerous, 25 to 80 cm. high, spreading from a more or less decumbent base, scarcely succulent; sheaths usually overlapping, rather close; ligule ciliate, 1 mm. long; blades 10 to 20 cm. long, 3 to 6 mm. wide, rather stiffly spreading or erect, flat, or involute toward apex, somewhat scabrous on the upper surface; panicle short-exserted or included at the base, 12 to 30 cm. long; axis angled, smooth except toward the summit; racemes 12 to 18, erect or narrowly ascending, the lower rarely distant more than their own length, gradually approximate, the lower 2.5 to 3 cm. long, gradually shorter upward, the axis usually ending in a more or less well-marked, pointed prolongation; spikelets subsessile, 2.2 to 2.4 mm. long, 1.4 mm. wide, turgid, abruptly and minutely pointed; first glume about one-third the length of the spikelet, truncate or obtuse; second glume nearly as long as fruit (exceeded only by the point of latter) 5-nerved; sterile lemma 5-nerved, abruptly pointed, equaling the fruit and like the second glume very faintly reticulate toward the summit, inclosing a hyaline palea and usually an abortive staminate flower; fruit 2.2 mm. long, 1.2 mm. wide, elliptic, abruptly pointed, strongly transversely rugose.

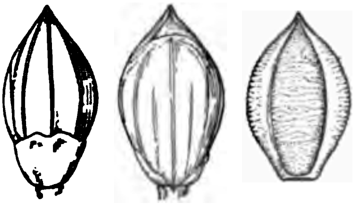


FIG. 11.—*P. geminatum*. From type specimen of *P. brizaeforme* Presl.

In many of the specimens cited below the base is lacking. Other specimens show a cespitose base with fibrous roots, and a single specimen from Cuba (*Hitchcock* 142) shows in addition to the cespitose base long slender stolons. The specimen grew in moist soil and the stolons extended over the mud, rooting at the nodes and sending up vertical shoots. These stolons appear very different from the succulent submerged bases of *P. paludivagum*.

DISTRIBUTION.

Moist ground, mostly near the coast, southern Florida and Texas, south through Mexico and the West Indies to Brazil and Peru; also in warmer parts of the Old World.

FLORIDA: Manatee, *Tracy* 7381; Key Largo, *Curtiss* 3601*; Key West, *Blodgett*, *Hitchcock* 613; *Rugel* 123.

---

[a] Syn. Pl. **1**: 81. 1805.

[b] Tabl. Encycl. **1**: 170. 1791. Persoon quotes Lamarck's description.

[c] Mant. Pl. **2**: 184. 1771. This is *Echinochloa colona* (L.) Link.

[d] Fl. Brit. Ind. **7**: 29. 1896.

[e] Fl. Ind. 26. 1768.

Texas: Dallas, *Reverchon* 1078; Giddings, *Hall* 823; Houston, *Thurow* in 1898; Pierce, *Tracy* 7392; Spofford, *Griffiths* 6306; without locality *Nealley* in 1884.
Mexico: Lower California, El Taste, *Brandegee* in 1893; San José del Cabo, *Brandegee* 14, 36; Guaymas, *Palmer* 690 in 1887; Yaqui River, *Palmer* 15 in 1869; Acapulco, *Palmer* 289 in 1894; Yucatan, Izamal, *Gaumer* 1027 (Hitchcock Herb.).

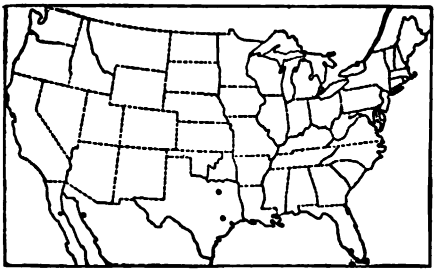


Fig. 12.—Distribution of *P. geminatum*.

Guatemala: San José, *Kellerman* 6250.
Bahamas: Nassau, *Curtiss* 175.
Cuba: Santiago de las Vegas, *Hitchcock* 143; Habana, *León* 918; Batabano, *Hitchcock* 142; Hanabana, *Wright* 761; Guanabacoa, *León* 920; Guantánamo, *Britton* 2281.
Jamaica: Gordon Town, *Hart* 806.
Porto Rico: Guanica, *Sintenis* 3367.
Danish West Indies: St. Croix, *Ricksecker* 212; St. Thomas, *Eggers* in 1882.
Leeward Islands: Guadeloupe, *Duss* 2690, 3584, *L'Herminier*.
Windward Islands: Martinique, *Duss* 1293.
Colombia: Santa Marta, *Smith* 151.
British Guiana: *Jenman* 3969, 4438, 6022.
Dutch Guiana: "Surinam" *Hering* (Acad. Phil. Herb.).
Brazil: Bahia, *Salzmann*.
Peru: Lima, *Wilkes* Expl. Exped.
Galápagos Islands: *Snodgrass & Heller* 557, 746 (Gray Herb.).

8. **Panicum paludivagum** sp. nov.

DESCRIPTION.

Plants apparently perennial, glabrous throughout; culms elongated, from a long, creeping base, rooting at the nodes, rather soft and succulent, as much as 2 meters long, the lower submerged portion loosely branching, the internodes, except the uppermost, somewhat swollen, the nodes constricted and often dark colored; sheaths papery and more or less inflated, especially the lower, mostly deciduous from the submerged portion; ligule ciliate, about 1 mm. long; blades 15 to 40 cm. long, conduplicate at base, flat above, long-acuminate, rather lax, very scabrous on the upper surface, smooth below, the lower much reduced or rudimentary; panicle usually overtopped or equaled by the leaves, 25 to 35 cm. long; axis angled, smooth; racemes 12 to 15, erect, the lower distant, 3 cm. long, the upper gradually approximate and shorter, the axis ending in a rudimentary spikelet or sometimes in a short, slender-pointed prolongation; spikelets appressed to the angled rachis, 2.8 to 3 mm. long, 1.4 to 1.6 mm. wide, narrowly ovate, not turgid, subacute; first glume about one-fifth the length of the spikelet, nerveless, erose-truncate; second glume half to two-thirds the length of the spikelet, faintly 3-nerved; sterile lemma as long as the fruit, very faintly nerved toward the summit, inclosing a palea of equal length and a staminate flower; fruit 2.8 to 3 mm. long, 1.2 to 1.3 mm. wide, narrowly ovate, acute, very obscurely rugose, the margins scarcely inrolled.

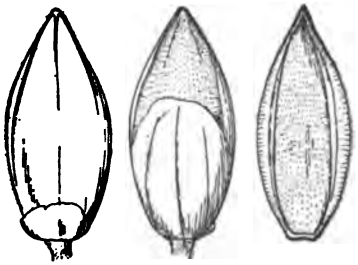


Fig. 13.—*P. paludivagum*. From type specimen.

Type U. S. National Herbarium no. 207685, collected May 16 to 31, 1894, "in water," in the vicinity of Eustis, Lake County, Florida, by George V. Nash (no. 746).

This species differs from *P. geminatum* in the succulent stems, the lower part submerged, branching and rooting at the nodes, the loose papery sheaths, the lower nearly bladeless, the elongated aerial blades, and the longer, not turgid spikelets, scarcely nerved glumes, shorter second glume, and nearly smooth fruit.

This species has usually been distributed as *Panicum paspalodes* Pers. It is closely related to the species described by Hooker as *P. punctatum* Burm.[a] but differs especially in the papery, nearly nerveless glumes and sterile lemma and the nearly smooth fruit.

The preceding species, *P. geminatum*, grows along the seacoast, while this species appears to be an inhabitant of fresh-water lakes and rivers. Lake Amatitlan, the cited locality for the Guatemala specimens, lies at an altitude of 1,200 meters. Pringle's no. 9556 is labeled "In water, Valley of Zamora, 5000 ft.," and his no. 3336, "Shallows of Lake Patzcuaro."

DISTRIBUTION.

Growing more or less submerged in fresh-water rivers and lakes of the interior at least up to 1,600 meters altitude, in Florida, Texas, Mexico, and Central America; also in Uruguay.

FLORIDA: Grasmere, *Combs* 760, 1052; Eustis, *Nash* 746; Manatee, *Tracy* 7412; Braidentown, *Combs* 1253; Little River, *Garber* in 1877.

TEXAS: Without locality, *Nealley* in 1888.

MEXICO: Guadalajara, *Palmer* 429 in 1886; State of Michoacan, Valley of Zamora, *Pringle* 9556; Lake Patzcuaro, *Pringle* 3336.

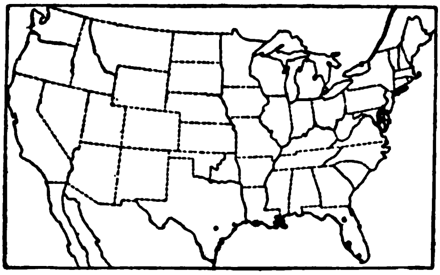


FIG. 14.—Distribution of *P. paludivagum*.

GUATEMALA: Amatitlan, *Tuerckheim* 8790; Lake Amatitlan, *Kellerman* 6253, 6254, *Pittier* 101.

URUGUAY: Montevideo, *Arechavaleta*.

9. Panicum barbinode Trin.

Panicum purpurascens Raddi, Agrost. Bras. 47. 1823, not H. B. K. 1815. Raddi states that this species is cultivated "in Provincia *Rio janeiro*," and also grows spontaneously. We have not seen the type, but Raddi's description applies well to *P. barbinode*.

Panicum barbinode Trin. Mém. Acad. St. Pétersb. VI. Sci. Nat. 1: 256. 1834. Trinius cites "Panicum barbinode Trin. ic. gr. XXVII. tab. 318," then unpublished, and states that his specimen is from Brazil. In the Icones[b] the habitat is given as Bahia. This specimen, in the Trinius Herbarium, which is the type, is labeled "Bahia, Riedel 1831."

Panicum guadaloupense Steud. Syn. Pl. Glum. 1: 61. 1854. "Ins. Guadaloupe." We have not seen the type, but the description applies well to *P. barbinode* Trin.

Panicum equinum Salzm.; Steud. Syn. Pl. Glum. 1: 67. 1854. "*Salzmann* in Bahia" is the first specimen cited. The specimen in the De Candolle Herbarium labeled "P. equinum Salz., Bahia, Salzm." is probably the type.

---

[a] See footnote [d], page 31, [*P. geminatum*] and the paragraph to which it is appended.

[b] Gram. Icon. 3: *pl. 318.* 1836.

Panicum pictigluma Steud. Syn. Pl. Glum. 1: 73. 1854. "Brasil." We have not seen the type of this, but Steudel cites *P. purpurascens* Raddi as a synonym and his description applies well to *P. barbinode.*

Panicum paraguayense Steud.; Doell in Mart. Fl. Bras. **2**²: 189. 1877. This is given as a synonym under *P. numidianum* Lam., and credited to "Steudel in plantarum Renggeri schedulis." We have not seen the type.

The name *P. numidianum* Lam. was taken up as the earliest one for this species by Nees,[a] Doell,[b] Hitchcock,[c] and others, but the type specimen of *P. numidianum,* "Ex numidia," in the Lamarck Herbarium, does not agree in all respects with the type of *P. barbinode.* The lower glume is longer and is 3-nerved instead of 1-nerved, the pedicels of the stalked spikelets are longer, and the rachis lacks the long hairs of *P. barbinode.*

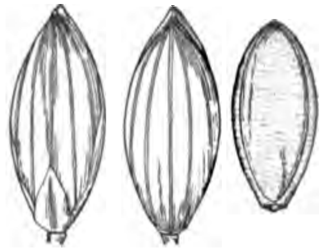


FIG. 15.—*P. barbinode.* From type specimen.

Panicum muticum Forsk.[d] is accepted for this species by Hooker [e] and others, but the identity of Forskål's species is uncertain, as we have not seen the type and the description is insufficient to identify it. Forskål's plant was collected at Rosetta and is said to be allied to *Panicum colonum.* We are informed by Mr. A. B. Rendle that the type is not in the herbarium of the British Museum.

Recent American authors[f] have applied the name *P. molle* Swartz to this species, but an examination of Swartz's type [g] shows it to belong to a very different species.

DESCRIPTION.

Plants perennial, sending out widely creeping stolons; culms decumbent at base, rooting at the lower nodes, 2 to 5 or 6 meters high, or higher in cultivation, robust, simple, or producing leafy shoots only, glabrous, the nodes densely villous; sheaths softly or harshly villous to merely papillose or even glabrous toward the summit, densely pubescent at the juncture with the blades; ligules membranaceous, densely ciliate, about 1 mm. long; blades ascending or spreading, 10 to 30 cm. long, 10 to 15 mm. wide, rounded at the base, glabrous on both surfaces, the margin scabrous; panicle 12 to 20 cm. long, about half as wide, the rather distant, subracemose, densely flowered branches ascending or spreading, the main axis and the somewhat flattened branches scabrous on the edges, densely pubescent in the axils, a few stiff hairs on the very short pedicels; spikelets 3 mm. long, 1.3 mm. wide, elliptic; first glume about one-fourth the length of the spikelet, 1-nerved, acute; second glume and sterile lemma subequal, both exceeded by the sterile palea; fruit about 2.5 mm. long, 1.1 mm. wide, obtuse, minutely transversely rugose.

This species, commercially known as "Para grass," is cultivated in South America, the West Indies, and Mexico, and has been introduced into the Gulf States.

---

[a] Agrost. Bras. 122. 1829.

[b] Mart. Fl. Bras. **2**²: 188. 1877.

[c] Contr. Nat. Herb. **12**: 224. 1909.

[d] Fl. Aegypt. Arab. 20. 1775.

[e] Fl. Brit. Ind. **7**: 34. 1896.

[f] Scribner, U. S. Dept. Agr. Div. Agrost. Bull. **14**: 54. 1900; Nash in Small, Fl. Southeast. U. S. 90. 1903.

[g] See *P. molle* Swartz, page 42; and for a full discussion of Swartz's types, see Hitchcock, Contr. Nat. Herb. **12**: 135–143. 1908.

DISTRIBUTION.

Cultivated and waste ground, escaped from cultivation, Florida to Texas, and throughout subtropical and tropical America; native of Brazil.

Florida: Merrimack, *Baker* 48; Braidentown, *Combs* 1265, 1311, *Tracy* 7763.
Alabama: Mobile, *Mohr*. in 1880.
Texas: Without locality, *Nealley*.
Mexico: Cuantla, *Holway* 3045; Manzanillo, *Palmer* 1078 in 1890; Colima, *Emrick* 8; Lower California, *Brandegee* 46.
Guatemala: Alta Vera Paz, *Tuerckheim* 7799, 8617; Mazatenango, *Maxon & Hay* 3476.
Salvador: Without locality, *Renson* 214.
Nicaragua: Chinandega, *Baker* 2053.
Costa Rica: Térraba, *Pittier* 412; border of Rio Tuís, *Tonduz* 11393.
Bahamas: Nassau, *Curtiss* W. Ind. Pl. 115.
Cuba: Puentes Grandes, *León* 283; near Cienfuegos, *Pringle* 26, Habana, *León* 568; Romelie, *Eggers* 4870.
Porto Rico: Bayamon, *Heller* 100, *Millspaugh* 324; Guanica, *Millspaugh* 727; Yauco, *Heller* 6293; Los Mameges, *Eggers* 1328.
Danish West Indies: St. Croix, *Ricksecker* 300.
Leeward Islands: Guadeloupe, *Duss* 2689, *L'Herminier* in part.
Windward Islands: Martinique, *Duss* 539; Granada, *Broadway* in 1904 and 1905.
Colombia: Santa Marta, *Smith* 211.
British Guiana: *Jenman* 5998.
Brazil: Bahia, *Salzmann*; Campinas, *Novaes* 1242; São Sebastião, *Löfgren* 3142; without locality, *Riedel*.
Paraguay: *Morong* 779a.
Ecuador: *Lehmann* 5744.

This species occurs in the warmer parts of the Old World, where it was probably introduced from South America. Hooker [a] states that it is "cultivated or naturalized" in Bengal and Ceylon. Trimen [b] makes the following statement concerning it: "A well-known fodder-grass in Ceylon, but there is no record of its introduction into the island. According to Roxburgh seeds were received at the Calcutta Botanical Garden from Sumatra in 1804, through Dr. Charles Campbell. As it is a native of tropical America, the Dutch, who then held ports in Sumatra, may have imported it from Surinam." Durand and Schinz [c] state concerning *P. barbinode*, which is referred to *P. molle* Swartz, "Maurice, Seychelles.—Distrib.: Originaire des Indes occid. et abondamment répandu maintenant dans l'ancien monde (Baker)."

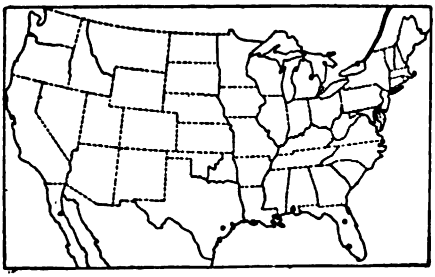


Fig. 16.—Distribution of *P. barbinode*.

Fasciculata.—Annuals with flat, usually rather wide blades; ligules ciliate or membranaceous-ciliate, not over 1 mm. long; inflorescence of several narrow or spike-like racemes along a main axis; second glume and sterile lemma usually more or less reticulate-veined, at least toward the apex, the lemma, excepting in occasional specimens of *P. molle*, inclosing a palea of nearly equal length and often a staminate flower; fruit transversely rugose.

---

[a] Fl. Brit. Ind. 7: 35. 1896. Hooker gives here several synonyms based upon Asiatic specimens, which we have not examined.

[b] Fl. Ceylon 5: 140. 1900.

[c] Consp. Fl. Afr. 5: 755. 1895.

- Spikelets 5 to 6 mm. long.................................. 15. *P. texanum.*
- Spikelets 2 to 4 mm. long.
  - Spikelets strongly reticulate-veined, 2 to 3 mm. long; glabrous.
    - Panicle branches long and spreading; blades pubescent or glabrous.............................. 11. *P. fasciculatum.*
    - Panicle branches short, appressed; blades narrow, pubescent.................................. 11a. *P. fasciculatum chartaginense.*
  - Spikelets scarcely reticulate-veined or only near apex.
    - Spikelets not over 2 mm. long, glabrous............ 10. *P. reptans.*
    - Spikelets over 3 mm. long, pubescent.
      - Rachis scabrous but not bristly................. 13. *P. adspersum.*
      - Rachis pilose with bristly hairs.
        - Plant more or less velvety, sheaths not papillose.......................... 12. *P. molle.*
        - Plant not velvety; sheaths papillose........ 14. *P. arizonicum.*

10. Panicum reptans L.

Panicum reptans L. Syst. Nat. ed. 10. **2**: 870. 1759. No locality is here given, but the same specimen is described more fully by Linnæus, under the name *Panicum grossarium*, later in his list of Jamaica plants.[a] The type specimen, in the Linnæan Herbarium, is marked "Br" [for Browne who sent the plant] and on the sheet the word "reptans" was written and then crossed out. A full discussion of the type of this and *P. grossarium* is given in another place.[b]

Panicum grossarium L. Syst. Nat. ed. 10. **2**: 871. 1759. The type specimen is the same as that of *P. reptans*.

Panicum prostratum Lam. Tabl. Encycl. **1**: 171. 1791. "Ex Insulis Caribæis." The type, in the Lamarck Herbarium, is from Santo Domingo.

Panicum caespitosum Swartz, Fl. Ind. Occ. **1**: 146. 1797. "Habitat in pascuis siccioribus Jamaicae." The type,[c] in the Swartz Herbarium, is from "Jamaica, Swartz."

Panicum insularum Steud. Syn. Pl. Glum. **1**: 61. 1854. "Ins. Antillae minores." The type, in the Steudel Herbarium, is labeled "Panicum insularum Steud. Antillae minores. Hohenacker."

Brachiaria prostrata Griseb. Abh. Ges. Wiss. Göttingen **7**: 263. 1857. Based on *Panicum prostratum* Lam.

Panicum aurelianum Hale in Wood, Class-book ed. 3. 787. 1861. "Damp soils, about N. Orleans (Hale)." We have not been able to locate the type of this, but in the herbarium of the Missouri Botanical Garden there is a specimen of *P. reptans* bearing a ticket reading "Panicum aurelianum New Orleans Dr. Hale." This agrees perfectly with Hale's description.

Panicum prostratum pilosa[*um*] Eggers, Fl. St. Croix & Virgin Isl. 104. 1879. "St. Croix (La Grange)." We have not seen the type. The description applies to the common form of *P. reptans* with pilose rachises.

---

[a] Amoen. Acad. **5**: 392. 1759.

[b] Hitchcock, Contr. Nat. Herb. **12**: 119. 1908.

[c] For an account of Swartz's American grasses, which are preserved in the Natural History Museum at Stockholm, see Hitchcock, Contr. Nat. Herb. **12**: 138. 1908.

DESCRIPTION.

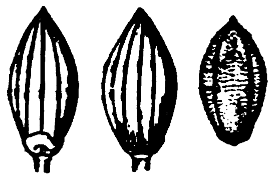


FIG. 17.—*P. reptans.* From type specimen of *P. prostratum* Lam.

Plants spreading, usually prostrate, or with a decumbent base, rooting at the lower nodes; culms slender, usually freely branching, ascending 10 to 30 cm. above the decumbent or creeping base, glabrous, the nodes usually puberulent; sheaths loose, glabrous, densely ciliate, shorter than the internodes; ligule a dense ring of hairs 1 mm. long or less; blades lanceolate or ovate-lanceolate, 1.5 to 6 cm. long, 4 to 12 mm. wide, cordate, glabrous or puberulent on both surfaces, the white, undulate margin hispid-scabrous, ciliate at base with long, stiff hairs; inflorescence finally long-exserted, 2 to 6 cm. long, consisting of 3 to 12 spike-like, ascending or spreading racemes arranged along a main axis; racemes solitary or sometimes somewhat fascicled, the upper approximate and shorter, the lower rather distant and 2 or 3 cm. long; rachises and pedicels scabrous and usually sparsely pilose with long, weak hairs; spikelets borne on one side of the rachis, irregularly and rather densely clustered, on pubescent pedicels 1 mm. or less in length, elliptic, 1.9 to 2 mm. long, 0.9 to 1 mm. wide, acute, glabrous; first glume about one-sixth the length of the spikelet, rounded or truncate; second glume and sterile lemma slightly exceeding the fruit, strongly 5 to 7-nerved; fruit 1.7 mm. long, 0.8 mm. wide, elliptic, apiculate.

As a whole this species is very uniform, but the long hairs on the secondary rachises and pedicels are sometimes wanting.

DISTRIBUTION.

Moist open ground and a frequent weed in waste places and cultivated soil, Florida to Texas, Mexico, and the West Indies, south to northern South America; also in the tropical regions of the Eastern Hemisphere.

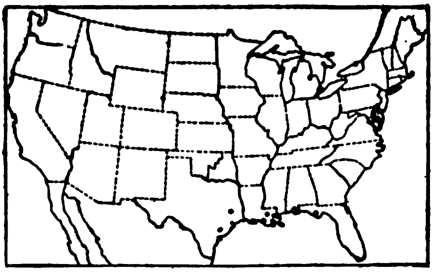


FIG. 18.—Distribution of *P. reptans.*

FLORIDA: Apalachicola, *Biltmore* Distr. Chapman Herb. 4276 (Gray Herb.).

ALABAMA: Mobile, *Mohr* in 1884.

LOUISIANA: Pointe a la Hache, *Langlois* 45 in 1882, 154 in 1883; Burnside, *Combs* 1431; New Orleans, *Ridell* in 1840; Algiers, *Tracy* 1837.

TEXAS: Columbia, *Bush* 266, 1296; Industry, *Wurzlow* 6; Houston, *Thurow* 21 in 1903; Pierce, *Tracy* 7387; Lynchburg, *Joor* 39 in 1884; without locality, *Nealley* in 1884 and 1888.

MEXICO: Cuicatlan, *Nelson* 1622.

CUBA: Habana, *Curtiss* 691, *Hitchcock* 146, *León* 276, 292, 297, 566, 576, 906, 910c; Madruga, *Curtiss* 536; San Antonio, *Hitchcock* 145; Herradura, *Tracy* 9103; Cienfuegos, *Pringle* 73; Baracoa, *Pollard, Palmer & Palmer* 19; La Magdalena, *Earle & Baker* 2455; Santiago, *León* 910; Guayabal, *León* 910b; without locality, *Wright* 3857.

JAMAICA: Hope, *Harris* 6845; Gordon Town, *Hart* 838.

PORTO RICO: Guanica, *Millspaugh* Pl. Utow. 726, *Sintenis* 3368; Salinas de Cabo, *Sintenis* 847; Coamo Springs, *Goll* 662; Ponce, *Heller* 497.

DANISH WEST INDIES: St. Croix, *Ricksecker* 77; St. Thomas, *Eggers* 293 (Hitchcock Herb.).

LEEWARD ISLANDS: Guadeloupe, *Duss* 3529.
WINDWARD ISLANDS: Martinique, *Duss* 1290.
COLOMBIA: Santa Marta, *Smith* 173.
VENEZUELA: Island of Margarita, *Miller & Johnston* 171.
BRITISH GUIANA: *Jenman* 6024.

11. **Panicum fasciculatum** Swartz.

Panicum fasciculatum Swartz, Prodr. Veg. Ind. Occ. 22. 1788. "*Jamaica.*" The type, in the Swartz Herbarium, has sparsely papillose-hispid sheaths and spikelets 2.1 to 2.2 mm. long.

Panicum fuscum Swartz, Prodr. Veg. Ind. Occ. 23. 1788. "*Jamaica.*" The type, in the Swartz Herbarium, consists of two smaller, more branching plants, with somewhat more hispid sheaths and more contracted panicles than in the type of *P. fasciculatum;* the spikelets are 2.1 to 2.3 mm. long.

Panicum flavescens Swartz, Prodr. Veg. Ind. Occ. 23. 1788. "*Jamaica.*" The type, in the Swartz Herbarium, consists of the upper portion of two culms with panicles somewhat more open than those of the type of *P. fasciculatum,* but otherwise very like that; the spikelets are 2.2 to 2.3 mm. long. This is not the species described under this name by Grisebach[a] and by Hooker,[b] which is a species of the section Ptychophyllum.

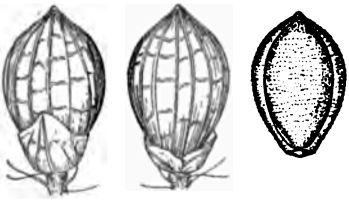


FIG. 19.—*P. fasciculatum.* From type specimen.

Panicum fusco-rubens Lam. Tabl. Encycl. 1: 171. 1791. "Ex Ins. Carbiaeis." The type, in the Paris Herbarium, is a portion of a large plant with a rather open panicle and spikelets 2.5 mm. long.

Panicum fastigiatum Poir. in Lam. Encycl. Suppl. 4: 277. 1816. Based on *Panicum fasciculatum* Swartz, the name changed because of *P. fasciculatum* Lam. 1798.

Panicum nigricans Willd.; Spreng. Syst. Veg. 1: 310. 1825. This is given as a synonym under *P. fasciculatum.* The type, in the Willdenow Herbarium, is from "Amer. Merid." collected by Humboldt. The spikelets are 2.1 to 2.2 mm. long.

Panicum fuscatum Presl; Nees, Agrost. Bras. 152. 1829. This is given as a synonym under *P. fasciculatum* γ. We have not seen Presl's specimen.

Panicum spithamaeum Willd.; Nees, Agrost. Bras. 152. 1829. This name is mentioned in a note under *P. fasciculatum.* The type, in the Willdenow Herbarium, from Humboldt, is labeled, "Amer. Merid." This name is mispelled "spithamineum" by Steudel.[c]

Panicum illinoniense Desv. Opusc. 91. 1831. "Habitat in America boreali." The type, in the Desvaux Herbarium, bears a slip with the name "Panicum illinoniense DesV. Op. p. 91," and "Hab. Carol." The locality, if meant for Carolina, is clearly an error, but there are many errors in the data on the labels of Desvaux's plants. The specimen is much like the type of *P. fuscum.*

Panicum reticulatum Griseb. Abh. Ges. Wiss. Göttingen 7: 264. 1857, not Torrey, 1852. Grisebach states that his specimen was collected by Duchaissing either in the Caribbees or in the Isthmus of Panama. We have not seen the type, but Grisebach later[a] refers this species to *P. fuscum* Swartz.

Panicum fuscum fasciculatum Griseb. Fl. Brit. W. Ind. 547. 1864. Based on *P. fasciculatum* Swartz.

---

[a] Fl. Brit. W. Ind. 547. 1864.

[b] Fl. Brit. Ind. 7: 56. 1896.

[c] Syn. Pl. Glum. 1: 80. 1854.

Panicum fasciculatum genuinum Doell in Mart. Fl. Bras. **2**^{2}: 204. 1877. Based on *P. fasciculatum* Swartz.

Panicum fasciculatum flavescens Doell in Mart. Fl. Bras. **2**^{2}: 205. 1877. Based on *P. flavescens* Swartz.

Panicum fasciculatum fuscum Doell in Mart. Fl. Bras. **2**^{2}: 205. 1877. Based on *P. fuscum* Swartz.

Panicum fasciculatum was described under a phrase name and figured by Sloane,[a] whose type is at the British Museum of Natural History.[b] Kuntze misapplies the name *Panicum paniculatum* (L.) Kuntze,[c] based on *Paspalum paniculatum* L., to this species, owing to the fact that Linnæus erroneously cites Sloane's plate of *Panicum fasciculatum* after his description of *Paspalum paniculatum*, the type of which is in the Linnæan Herbarium.[d] Nash[e] also later made the combination *Panicum paniculatum* on the same grounds.

DESCRIPTION.

Plants erect or spreading from a decumbent base, the more robust becoming much branched from the lower nodes; culms 30 to 100 cm. or more high, glabrous or scabrous, or sometimes pubescent below the panicle or hispid below the appressed-pubescent nodes; sheaths sometimes shorter, sometimes longer than the internodes, glabrous or more or less papillose-hispid, densely ciliate, pubescent at the juncture with the blades; ligule a dense ring of hairs about 1 mm. long; blades flat, 4 to 30 cm. long, 6 to 20 mm. wide, glabrous, usually scabrous above, sometimes sparsely hispid on one or both surfaces, the nerves in the larger blades conspicuous, sometimes appearing somewhat plicate; inflorescence short-exserted or included at base until maturity, consisting of a series of spike-like racemes arranged along a scabrous, sometimes pilose, main axis, 5 to 15 cm. long, the racemes 5 to 10 cm. long, solitary or fascicled, narrowly ascending to somewhat spreading, spikelet-bearing from the base, or naked below, the short-pediceled spikelets approximate or somewhat crowded, borne singly, or two or three together on short branchlets, along the under side of the axis; spikelets bronze to mahogany colored, 2.1 to 2.5 mm. long, in occasional specimens as much as 3 mm. long, obovate, turgid, abruptly short-pointed, glabrous; first glume clasping, about one-third the length of the spikelet, subacute, 5 to 7-nerved; second glume and sterile lemma slightly exceeding the fruit, 9-nerved, faintly to strongly transversely wrinkled between the nerves; fruit 1.9 to 2.3 mm. long, obovate, obscurely apiculate.

This species is variable in the amount of pubescence and in the size of the spikelets. Almost all the West Indian specimens cited below have spikelets not over 2.3 mm. long. The greater number of specimens from Mexico and the United States have spikelets 2.5 to 2.8 mm. long, while about half the Central American specimens have the larger spikelets. This difference in size can not be correlated with any other character.

DISTRIBUTION.

Moist open ground, often a weed in fields and along roadsides, southern Florida and Texas, southward through Mexico and the West Indies to Brazil and Ecuador.

FLORIDA: Cape Canaveral, *Curtiss* 3589; Lastero Bay, *Garber* 36; Sneeds Island, *Tracy* 6455; Caxambas Island, *Simpson* 275; Marco, *Hitchcock* Lee Co. Pl. 484; Key West, *Rugel;* without locality, *Blodgett.*

---

[a] Voy. Jam. **1**: 115. *pl. 72. f. 2.* 1707.

[b] See Hitchcock, Contr. Nat. Herb. **12**: 131. 1908, for an account of Sloane's Jamaica grasses.

[c] Rev. Gen. Pl. **3**: 363. 1898.

[d] See Hitchcock, Contr. Nat. Herb. **12**: 116. 1908.

[e] Bull. Torrey Club **30**: 381. 1903.

Texas: Robbstown, *Griffiths* 6508.

Mexico: Santa Ana, *Griffiths* 6857; Guaymas, *Palmer* 158 and 207 in 1887, Alamos, *Palmer* 694 in 1890; Hermosillo, *Hitchcock* 3598; Chihuahua, *Palmer* 1a in 1885; Colima, *Palmer* 19 in 1897; Topolobampo, *Palmer* 241 in 1897; Culiacán, *Palmer* 1557 in 1891; Teotalcingo, *Liebmann* 277; Santa Maria Tlatella, *Liebmann* 279; Córdoba, *Finck* in 1893; State of Chiapas, *Nelson* 2874, 2958; Merida, *Schott* 384; Rosario, *Rose* 1834, 1884.

Guatemala: Alta Vera Paz, *Goll* 81; Chicacao, *Heyde & Lux* 6404; Esquintla, *J. D. Smith* 2233; Dept. Huehuetenango, *Seler* 2704; Gualán, *Deam* 6267.

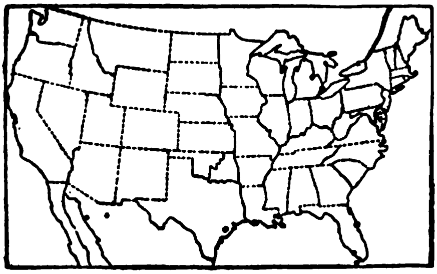


Fig. 20.—Distribution of *P. fasciculatum*.

Honduras: San Pedro Sulá, *Thieme* 195, 5584.

Nicaragua: *Flint* in 1868.

Costa Rica: Puerto Viejo, *Biolley* 7471; Matina, *Pittier* 9727; Nicoya, *Tonduz* 13749; near the Rio Grande, *Pittier* 2035.

Panama: Bocas del Toro, *Hart* 78.

Bahamas: Turks Island, *Madiana* (Gray Herb.).

Cuba: San Antonio, *Eggers* 4875; Cienfuegos, *Pringle* 74, 124; Santiago de las Vegas, *Wilson* 593; Habana, *León* 573; Herradura, *Tracy* 9091; Sancti Spiritus, *León* 916; Santiago, *León & Boillot* 813.

Jamaica: Bath, *Maxon* 2361; Hope Gardens, *Maxon* 1659; Gordon Town, *Hart* 785, 840.

Haiti: *Jacquemont* (Gray Herb.).

Porto Rico: Rio Piedras, *Barrett* 63, *Heller & Heller* 135; Culebra, *Britton & Wheeler* 137; Caguas, *Goll* 385, 588; Ponce, *Heller* 6226, 6302; Guinaca, *Sintenis* 3647; "Monte Goyo," *Sintenis* 1901; Aguadilla, *Heller* 4528; Aibonito, *Underwood & Griggs* 462; without locality, *Underwood & Griggs* 824.

Danish West Indies: St. Croix, *Ricksecker* 317; St. Thomas, *Eggers* in 1882.

Leeward Islands: Guadeloupe, *Duss* 2691, *L'Herminier*.

Windward Islands: Martinique, *Duss* 537, 538; *Hahn* in 1867–1870; Granada, *Broadway* in 1905.

Colombia: Santa Marta, *H. H. Smith* 208; Santa Ana, *Pittier* 1610.

Venezuela: Island of Margarita, *Miller & Johnston* 180.

Trinidad: *Botanic Gardens Herb.* 2283, 3192.

French Guiana: Without data (Gray Herb.).

Brazil: Piauhy, *Gardner* 2357.

Ecuador: El Recreo, *Eggers* 15418, 15834.

Galápagos Islands: *Agassiz* in 1891.

11a. **Panicum fasciculatum chartaginense** (Swartz) Doell.

Panicum chartaginense Swartz, Prodr. Veg. Ind. Occ. 22. 1788. "*America meridionalis, Chartagena.*" The type, in the Swartz Herbarium, is a more or less prostrate-spreading plant, with short, crowded leaves and narrow, compact panicles somewhat included at base. The blades, and especially the sheaths, are hispid; the spikelets are 2.6 to 2.8 mm. long.

Panicum reticulatum Torr. in Marcy, Expl. Red Riv. 299. 1852. "Main fork of Red River, [Texas] July." The type, in the Torrey Herbarium, consists of three slender plants with papillose-hispid sheaths and blades and contracted panicles; the spikelets are 2.8 mm. long.

Panicum fasciculatum c[h]arthaginense Doell in Mart. Fl. Bras. 2^2: 205. 1877. Based on *P. chartaginense* Swartz.

Panicum fasciculatum reticulatum Beal, Grasses N. Amer. **2**: 117. 1896. Based on *P. reticulatum* Torr.

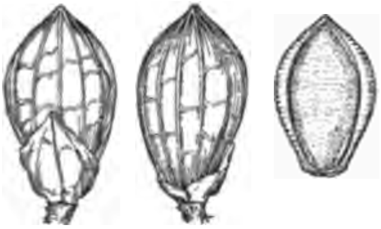


Fig. 21.—*P. fasciculatum chartaginense.* From type specimen.

Panicum fuscum reticulatum Scribn. & Merr. U.S. Dept. Agr. Div. Agrost. Circ. **32**: 4. 1901. Based on *P. reticulatum* Torr. The specimen here referred to *P. chartaginense* is *P. ramosum* L.[a] of Asia.

DESCRIPTION.

Differing from *P. fasciculatum* in having smaller, more compact panicles, the branches ascending or appressed, narrower blades, usually pubescent on both surfaces, and spikelets 2.6 to 3 mm. long.

There are many intermediate specimens. The well-marked form is usually smaller, with appressed branches and blades. It occurs in the drier regions of the Mexican Plateau. Some specimens, such as *Griffiths* 1545 and 1616, cited under *P. fuscum reticulatum* by Scribner and Merrill,[b] are nearly glabrous.

The following specimens from Texas seem to be intermediate between the species and subspecies. They are mostly large plants with rather open panicles and spikelets about 3 mm. long: Fort Worth, *Tracy* 8171; Dona, *Tracy* 8890; College Station, *Price* in 1895; Abilene, *Bentley* in 1899; Victoria, *Plank* 74; San Antonio, *Havard*, *Heller* 1698, *Jermy* 202; Dallas, *Reverchon* 94; Houston, *Thurow* 16.

A closely allied species, *P. multiculmum* Anders.,[c] from the Galápagos Islands, has been referred to *P. chartaginense* Swartz by Grisebach.[d]

DISTRIBUTION.

Prairies, fields, and waste ground, Texas and Arizona to Mexico; also in Venezuela (Swartz).

Texas: Uvalde, *Reverchon* 1086; Dallas, *Bush* 1157; Taylor, *Ball* in 1901; Abilene, *Bentley* in 1899; Waco, *Plank* 11; Big Springs, *Tracy* 8289; Columbia, *Bush* 270; Manor, *Hall* 825; San Antonio, *Havard* in 1882, *Hitchcock* 162, *Jermy* 203, *Plank* 47; Bexar County, *Jermy* 22; Laredo, *Sauvignet* in 1892; without locality, *Nealley* in 1887, *Wright* 797.

New Mexico: Socorro, *Plank* 38.

Arizona: Tucson, *Griffiths* 1545, 1616, 3362, *Hitchcock* 3495; *Pringle* in 1881; Papayo Reservation, *Griffiths* 1654; Santa Rita Mountains, *Griffiths* 7297, 7299.

Mexico: Chihuahua, *Pringle* 379, 380; San Dieguito, *Palmer* 152 in 1904; Victoria, *Palmer* 412 in 1907; Guaymas, *Hitchcock* 3561, *Palmer* 159 in 1887 in part.

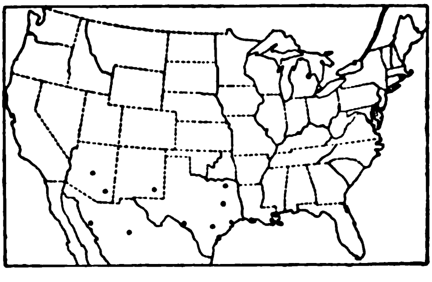


Fig. 22.—Distribution of *P. fasciculatum chartaginense.*

---

[a] See page 44.

[b] Loc. cit.

[c] Vet. Akad. Handl. Stockh. **1853**: 133. 1855.

[d] Fl. Brit. W. Ind. **546**. 1864.

12. Panicum molle Swartz.

Panicum molle Swartz, Prodr. Veg. Ind. Occ. 22. 1788. "*India occidentalis*." The type, in the Swartz Herbarium, has already been discussed.[a] The sterile lemma bears in its axis a well-developed palea. There is some uncertainty as to the original locality of the type specimen of *P. molle*. It is said by Swartz to come from the West Indies, but we have seen no other specimens of this species from that region.

Panicum velutinosum Nees; Trin. Gram. Pan. 144. 1826. This is given as a synonym of *Panicum petiveri* Trin. *β*. Trinius's specimen was from "Brasil," communicated by "N. AB ESENB." This is in the Trinius Herbarium and is the original of the plate[b] of *P. velutinosum* in the Icones. The spikelets differ from those of the type of *P. molle* in that the palea of the sterile lemma is wanting. Nees[c] later described *P. velutinosum*, giving the locality as follows: "*Habitat in sylvaticis prope Villa da Cachoeira, provinciae Bahiensis.*" [Brazil]. His specimen, of which Trinius's is evidently a duplicate, is in the Munich Herbarium. There are six plants on the sheet, all much smaller than Swartz's plant, and having shorter, broader blades. The Argentine specimens, which have been referred to *P. velutinosum*, have a well-developed palea in the sterile floret. Doell[d] recognized the two species as distinct chiefly because of this character. More material is needed definitely to determine whether or not these two forms should be segregated.

In Kunth's Enumeratio[e] the name is misprinted *P. velutinum* Nees.

DESCRIPTION.

Plants ascending or spreading from a decumbent base, usually branching; culms 30 to 70 cm. high, softly pubescent, at least below the pubescent nodes; sheaths usually shorter than the internodes, loose, softly pubescent between the nerves, sometimes obscurely so, densely ciliate; ligule a dense ring of hairs about 1 mm. long; blades ascending or spreading, 4 to 15 cm. long, rarely longer, 7 to 15 mm. wide, rounded at the base, finely and softly pubescent on both surfaces or nearly glabrous on the upper; panicles short-exserted or, especially those of the branches, included at base, 6 to 15 cm. long, the several to many subracemose branches ascending, rarely widely spreading at maturity, the main axis and those of the branches densely softly pubescent and also beset with stiff, spreading hairs about 1 mm. long, the short pedicels of the somewhat crowded spikelets similarly hirsute; spikelets 3.4 to 3.8 mm. long, 1.5 to 1.7 mm. wide, obovate, turgid, abruptly pointed, short-attenuate at base, a distinct internode of the rachilla between the first and second glumes; first glume clasping, half as long as the spikelet or more, acute, 5-nerved, the nerves usually anastomosing toward the apex, pilose; second glume and sterile lemma pointed beyond the fruit, 5-nerved, obscurely reticulated between the nerves, pilose, often densely so; fruit 2.6 to 3 mm. long, 1.5 to 1.6 mm. wide, elliptic, apiculate.

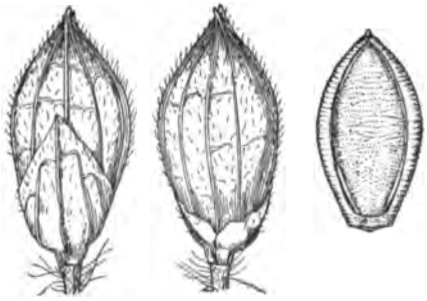


FIG. 23.—*P. molle*. From type specimen.

The Argentine specimens are less velvety and approach in appearance the large forms of *P. arizonicum*, but these as well as the Mexican specimens lack the papillae commonly present on the sheaths of *P. arizonicum*.

---

[a] See footnote [c], p. 36.

[b] Trin. Gram. Icon. 2: *pl. 180*. 1829.

[c] Agrost. Bras. 121. 1829.

[d] Mart. Fl. Bras. 2^2: 187. 1877.

[e] Enum. Pl. 1: 92. 1833.

DISTRIBUTION.

River banks and moist places, Mexico to Argentina.

MEXICO: Colima, *Palmer* 149 in 1897; Lodiego near Culiacán, *Palmer* 1660 in 1891; Saltillo, *Brandegee* 17 in 1893 (Univ. Cal. Herb.); Yucatan, *Schott* 592 (Field Mus. Herb.).

GUATEMALA: Agua Caliente, *Deam* 6143.

BRAZIL: Piauhy, *Gardner* 2353, 2361; Prov. Ceará, *Gardner* 1876 (all in Gray Herb.).

ARGENTINA: Córdoba, *Stuckert* 11719, 56 in Kneucker Gram. Exs. 366.

13. Panicum adspersum Trin.

Panicum adspersum Trin. Gram. Pan. 146. 1826. Trinius states as to the origin of his specimen, "V. sp. Doming. (SPRENGEL, sub nomine *Pan. caespitosi*.)" The type, in the Trinius Herbarium, is labeled, "Panicum adspersum m. St. Domingense s.[ub] n.[omine] P. caespitosum Lam. (!) mis. cl. Sprengel." This specimen was afterwards figured by Trinius.[a] The spikelets are 3.2 mm. long.

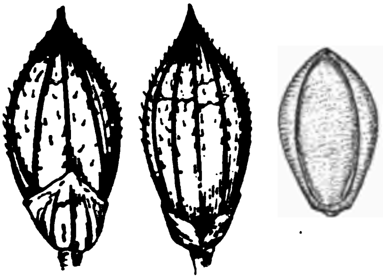


FIG. 24.—*P. adspersum*. From type specimen.

Panicum thomasianum Steud.; Doell in Mart. Fl. Bras. 2^2: 188. 1877. This is mentioned as a synonym under *P. adspersum* Trin. The type, collected by Duchaissing in St. Thomas, is in the Steudel Herbarium. This species has been referred by many authors to *P. grossarium* L., but that name is a synonym of *P. reptans*.

DESCRIPTION.

Plants light green, glabrous except as noted, ascending or spreading from a decumbent base, rooting at the lower nodes, commonly rather freely branching; culms 30 to 100 cm. high, compressed; sheaths shorter than the internodes, rather loose, densely ciliate at least toward the summit; ligule a ciliate-membranaceous ring scarcely 1 mm. long; blades ascending or spreading, 5 to 15 cm., rarely as much as 20 cm. long, 8 to 20 mm. wide, abruptly acuminate, sometimes ciliate at the rounded base, scabrous on the margin; panicles rather short-exserted, 6 to 15 cm. long, composed of few to many ascending spike-like racemes, 3 to 10 cm. long, the slender axes angled, scabrous, usually pubescent in the axils, bearing approximate, short-pediceled spikelets singly or two or three together on short branchlets along the under side; spikelets 3.2 to 4 mm. long, 1.5 to 1.8 mm. wide, fusiform, turgid, abruptly acuminate; first glume clasping, about one-third the length of the spikelet, subacute, 5-nerved, glabrous; second glume and sterile lemma exceeding the fruit and pointed beyond it, 5 to 7-nerved, hispid at least toward the summit, or sometimes hispidulous only, rarely glabrous, sometimes obscurely reticulate; fruit 2.2 to 3 mm. long, obovate, obtuse.

This species varies much in size and habit. The Florida specimens are more robust than many of those from the West Indies, including the type specimen. There appears, however, to be no characters by which these can be separated. Some of the Cuban specimens, such as *Curtiss* 748, are equally robust. In a specimen from St. Croix, *Eggers* in 1876, the spikelets are strongly papillose-hispid.

---

[a] Gram. Icon. 2: *pl. 169.* 1829.

DISTRIBUTION.

Moist open ground, Florida and the West Indies, often a weed in pastures and cultivated fields. It has been collected as a ballast plant by Mohr at Mobile, Alabama, by Scribner at Philadelphia, Pennsylvania, and by Martindale at Camden, New Jersey.

Florida: St. Augustine, *Curtiss* 6705, *Kearney* 176, *Ricker* 952; Sanibal Island, *Simpson* 292; Marco, *Hitchcock* Lee Co. Pl. 485; Miami, *Chase* 3851, *Hitchcock* 650; Sand Key, *Curtiss* 3606**; Key West, *Curtiss* 5431, *Hitchcock* 611, 618, 620; without locality *Chapman*.

Alabama: Mobile, on ballast, *Mohr* in 1891.

Bahamas: Nassau, *Curtiss* 113.

Cuba: Habana, *Curtiss* 748, *León* 291, 570; Santiago de las Vegas, *Baker & Wilson* 512, *Hitchcock* 147, 148, *Tracy* 9109; Triscornia, *Hitchcock* 159; Cabanas, *Palmer & Riley* 746, 771; Herradura, *Tracy* 9102; Sancti Spiritus, *León* 925; Guines, *León* 924; without locality, *Wright* 3869.

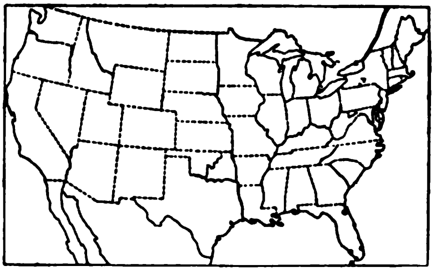


Fig. 25.—Distribution of *P. adspersum*.

Jamaica: Without locality, *March* (Gray Herb.).

Porto Rico: Between Coamo and Aibonito, *Sintenis* 1957.

Danish West Indies: St. Croix, *Eggers* in 1876, *Ricksecker* 66, 384.

Leeward Islands: Guadeloupe, *Duss* 3180.

Panicum ramosum L. Mant. Pl. 1: 29. 1767, an Asiatic species of this group and somewhat resembling *P. adspersum*, but with smaller spikelets, having a finely transversely rugose sterile lemma, in appearance much like the fertile lemma, was collected on ballast, at Mobile, Ala., Sept. 16, 1891, by Dr. Charles Mohr. This is the specimen referred by Scribner[a] to *P. chartaginense*.

14. Panicum arizonicum Scribn. & Merr.

Panicum dissitiflorum Vasey in S. Wats. Proc. Amer. Acad. 24: 80. 1889. This is listed without description, Palmer's numbers 159 and 190, Guaymas, Mexico, being cited. Two species were distributed under *Palmer* 159, *P. arizonicum* and *P. fasciculatum chartaginense*, a specimen of each of which is on the sheet of no. 159 which was in the National Herbarium in the time of Doctor Vasey. The plant of *P. arizonicum* is taken as the type, since other specimens of this species are named *P. dissitiflorum* in Vasey's writing.

Panicum fuscum major[us] Vasey, U. S. Dept. Agr. Div. Bot. Bull. 8: 26. 1889. "Mexico (Dr. E. Palmer)." The type, in the National Herbarium, is from southwestern Chihuahua, collected August to November, 1885, no. 1 b. It is a robust specimen, 60 cm. high, lacking the base, the blades as much as 15 cm. long and 15 mm. wide, the large panicle 15 cm. long, the sheaths and under surface of the blades papillose-hispid.

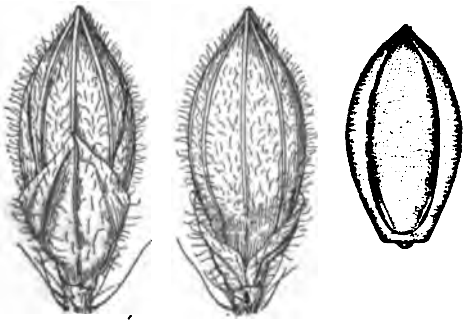


Fig. 26.—*P. arizonicum*. From type specimen of *P. dissitiflorum* Vasey.

---

[a] U. S. Dept. Agr. Div. Agrost. Circ. 32: 4. 1901.

Panicum arizonicum Scribn. & Merr. U. S. Dept. Agr. Div. Agrost. Circ. **32**: 2. 1901. Based on "(*Panicum* (sine nomine) Scribn. Bul. Torr. Bot. Club, **9**: 76. 1882; *P. fasciculatum dissitiflorum* Vasey, in herb. Not *P. dissitiflorum* Steud. 1841)." The authors also cite, "Type specimen collected on mesas near Camp Lowell, Santa Cruz Valley, Arizona, 465 C. G. Pringle, 1881." As indicated above this species was first mentioned as "Panicum (Virgaria) sp." where the specimen referred to is *Pringle* 465. The same specimen, which is in the National Herbarium, was marked by Doctor Vasey, "Panicum fasciculatum var. dissitiflorum," and later by Scribner and Merrill as the type of *P. arizonicum.* It is about 60 cm. high, but more slender than Palmer's specimen mentioned above; the sheaths and blades bear only a few scattered papillæ, mostly without hairs.

Panicum fasciculatum dissitiflorum Vasey; Scribn. & Merr. U. S. Dept. Agr. Div. Agrost. Circ. **32**: 2. 1901. This herbarium name is given as a synonym of *P. arizonicum* of which it is a typonym.

Panicum arizonicum tenue Scribn. & Merr. U. S. Dept. Agr. Div. Agrost. Circ. **32**: 3. 1901. "Type specimen collected at Fort Huachuca, Arizona, by T. E. Wilcox in 1894." The type, in the National Herbarium, is the small form common in sterile soil. The largest specimen is 17 cm. high. Some of the sheaths are sparsely papillose-hispid, some glabrous.

Panicum arizonicum laeviglume Scribn. & Merr. U. S. Dept. Agr. Div. Agrost. Circ. **32**: 3. 1901. "Type specimen collected at Mescal, Arizona, 1810 David Griffiths, October, 1900." The type, in the National Herbarium, is a plant about 20 cm. high, with glabrous spikelets and glabrous to sparsely papillose-hispid sheaths.

Panicum arizonicum major[*us*] Scribn. & Merr. U. S. Dept. Agr. Div. Agrost. Circ. **32**: 3. 1901. Based on *P. fuscum majus* Vasey.

DESCRIPTION.

Plants erect or ascending, sometimes decumbent at base and rooting at the lower nodes, branching at the base and lower nodes; culms 20 to 60 cm. high, glabrous except below the panicle, the nodes sometimes slightly pubescent; sheaths shorter than the internodes or the upper often overlapping, rather loose, glabrous to strongly papillose-hispid; ligule a ring of hairs about 1 mm. long; blades rather thin, ascending or spreading, 5 to 15 cm. long, 6 to 12 mm. wide, rounded at base, glabrous on both surfaces, or scabrous to papillose-hispid beneath, the scabrous, thin, cartilaginous margin usually papillose-ciliate at base; panicles usually long-exserted, 7 to 20 cm. long, the solitary, ascending, slender branches loosely flowered, the spikelets borne on very short, appressed branchlets, the pedicels and axes of branchlets, branches, and the entire panicle finely pubescent and also copiously papillose-hirsute; spikelets 3.5 to 3.8 mm. long, obovate-elliptic, abruptly pointed, attenuate at base as in *P. molle*, densely hirsute to glabrous; first glume clasping, half the length of the spikelet, acute, 5-nerved; second glume and sterile lemma pointed beyond the fruit, 5-nerved, the nerves sometimes anastomosing as in *P. molle*; fruit 2.9 to 3 mm. long, 1.5 to 1.6 mm. wide, obovate-elliptic, apiculate.

This species is variable in size and in the amount of pubescence. In cultivated or moist soil it is robust as in the type of the species or of Scribner and Merrill's subspecies *majus*. The commoner form is smaller, more like the type of Scribner and Merrill's subspecies *tenue*. The form separated by Scribner and Merrill as subspecies *laeviglume*, because of the glabrous spikelets, appears to have no other distinguishing characters. The following specimens are this form, though in some cases the spikelets are sparsely pubescent or some of the spikelets are glabrous and some are pubescent: *Canby* 8, *Griffiths* 1913, 6152, 6168, 6929, 6938, 6939, 6990, *Griffiths & Thornber* 75, 230, 239, *Merton* 1694, *Metcalfe* 768, *Pringle* 487, *Smith* in 1896, *Wilcox* in 1894.

DISTRIBUTION.

Open sandy or stony ground, western Texas to southern California and northern Mexico.

Texas: El Paso, *Jones* in 1884; Presidio County, *Nealley* in 1892.

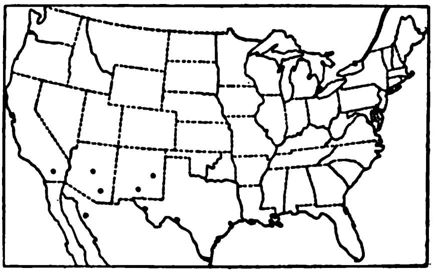


FIG. 27.—Distribution of *P. arizonicum.*

New Mexico: Mangas, *Smith* in 1896, *Metcalfe* in 1897; Las Cruces, *Griffiths* 7399 in part; Mogollon Mountains, *Metcalfe* 768; Sierra County, *Metcalfe* 1294.

Arizona: Tucson Mountains, *Griffiths* 6152, 6938, 6939; Tucson, *Griffiths* 1596, 3356, 6168, 6737, 7017, *Hitchcock* 3482; Santa Rita Mountains, *Griffiths* 5981, 6894, 6990, *Griffiths & Thornber* 75, 230, 239; Santa Catalina Mountains, *Griffiths* 7143, 7148, *Lemmon* 3062; Sasabe, *Griffiths* 6929; Bowie, *Toumey* in 1896; Lowell, *Pringle* 465; Mescal, *Griffiths* 1810; Fort Huachuca, *Wilcox* in 1894; Patagonia, *Hitchcock* 3695; Bisbee, *Mearns* 1072; San Pedro River, *Merton* 1694; Cochise, *Griffiths* 1913; without locality, *Lemmon* 353.

California: Jamacha, *Canby* 8 in 1894.

Mexico: San José del Cabo, *Brandegee* 18 in 1890; south of Nogales, *Hitchcock* 3637; Arroyo San Lazaro, *Brandegee* in 1902; Guaymas, *Hitchcock* 3562, *Palmer* 159 in 1887 in part; Hermosillo, *Hitchcock* 3542; Nogales, *Griffiths* 6747, 6759; Loquka, [Lacuca?] Sonora, *Griffiths* 6891; Topolobampo, *Palmer* 250 in 1897; State of Chihuahua, *Palmer* 1 b in 1885, *Pringle* 487; State of Durango, *Rose* 2280.

15. **Panicum texanum** Buckl.

Panicum texanum Buckl. Prel. Rep. Geol. Agr. Surv. Tex. App. 3. 1866. "Austin, Texas." The type specimen, in the herbarium of the Philadelphia Academy, consists of two overmature plants lacking the base.

DESCRIPTION.

Plants erect or ascending, often decumbent and rooting at the lower nodes, branching from the base and commonly from the lower and middle nodes; culms stout, 50 to 150 cm. high, or in robust specimens as much as 3 meters high, softly pubescent at least below the nodes and below the panicles; sheaths softly pubescent, often papillose; densely ciliate, the lower shorter than the internodes, the upper usually overlapping; ligules about 1 mm. long; blades ascending or spreading, 8 to 20 cm. long, 7 to 15 mm. wide, rounded at the base, softly pubescent on both surfaces, often finely papillose, panicles finally exserted, 8 to 20 cm. long, 1 to 3 cm.

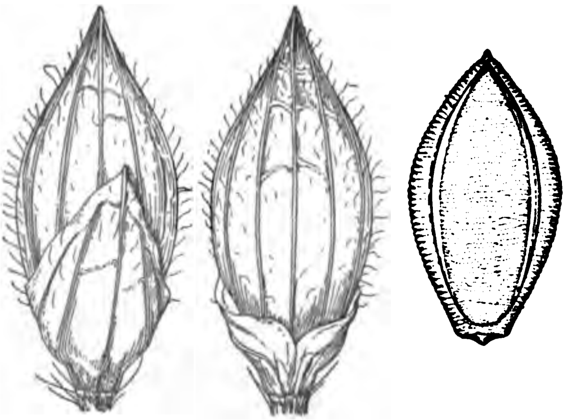


FIG. 28.—*P. texanum.* From type specimen.

wide, the main axis much exceeding the erect branches, the axes densely clothed with short pubescence having long, stiff hairs intermixed, the short-pediceled spikelets somewhat crowded; spikelets 5 to 6 mm. long, about 2 mm. wide, fusiform, pointed, short-attenuate at base, pilose; first glume clasping, more than half the length of the spikelet, acute, 3 to 5-nerved; second glume and sterile lemma exceeding the fruit, 5-nerved, often obscurely reticulate; fruit 3.7 to 3.8 mm. long, about 2 mm. wide, elliptic, apiculate.

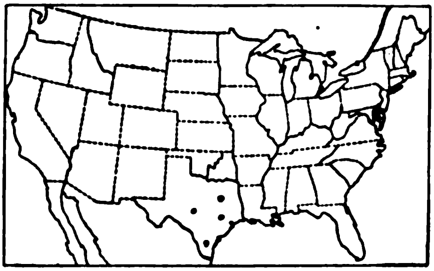


FIG. 29.—Distribution of *P. texanum*.

DISTRIBUTION.

Prairies and open ground, especially on low land along streams, often a weed in waste ground and cultivated fields, Texas and northern Mexico.

This is sparingly cultivated under the name of Colorado grass.

TEXAS: Dallas, *Reverchon* 1226 in Curtiss N. Amer. Pl. 3607A; Corsicana, *Reverchon* 2228; Pierce, *Tracy* 7748; Victoria, *Plank* 73; Austin, *Plank* 31; Harvester, *Thurow* in 1898; Wallisville, *Wallis* in 1880; Goliad County, *Lea* in 1874; San Antonio, *Bush* 1198, *Havard* in 1882; Corpus Christi, *Hitchcock* 163.

MEXICO: Monterey, *Hitchcock* 5540.

Dichotomiflora.—Annual plants with smooth culms, mostly large, spreading panicles, the branchlets short and appressed along the ascending or rarely spreading main branches; ligule membranaceous below, densely ciliate above, 1 to 3 mm. long; spikelets glabrous, narrow, acute or acuminate, 2 to 5 mm. long, the first glume one-fifth to one-fourth as long, truncate or with a broadly triangular tip; fruit smooth and shining.

Panicles narrow, less than 1 cm. wide........................ 16. *P. vaseyanum*.
Panicles open, the branches usually ascending.
  Fruit acuminate; culms with a long, rooting base........ 19. *P. elephantipes*.
  Fruit not acuminate.
    Sheaths papillose-hispid............................. 18. *P. bartowense*.
    Sheaths glabrous..................................... 17. *P. dichotomiflorum*.

16. Panicum vaseyanum Scribn.

Panicum vaseyanum Scribn.; Beal, Grasses N. Amer. **2**: 140. 1896. The only specimen cited is "Mexico, *Pringle* 1415." The type specimen, in the National Herbarium, was collected in the State of Chihuahua, in "Wet places, pine plains, base of Sierra Madre," September 30, 1887, by C. G. Pringle.

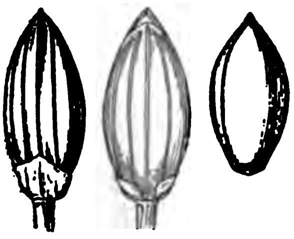


FIG. 30.—*P. vaseyanum*. From type specimen.

DESCRIPTION.

Plants spreading, branching at base and at the lower and middle nodes, glabrous throughout; culms 50 to 70 cm. long, somewhat compressed; sheaths shorter than the elongated internodes; ligules 1 to 2 mm. long; blades 5 to 20 cm. long, 3 to 7 mm. wide, linear, scarcely narrowed at the folded or enveloping base; panicles terminal and from the axils of the upper leaves of the main culms and large branches, narrow, 4 to 7 cm. long, less than 1 cm. wide, partially included, equaled or exceeded by the erect uppermost blade; spikelets short-pediceled, narrowly ovate, 2.5 mm. long, 1.1 to 1.2 mm. wide, subacute; first glume about one-fifth the length of the spikelet, truncate or obtuse; second glume slightly shorter than the sterile lemma, both 7-nerved, palea of the sterile floret obsolete; fruit 2.1 mm. long, 1 mm. wide, elliptic, apiculate.

This very distinct species is known from a single collection only, that distributed by Pringle, mentioned above.

17. Panicum dichotomiflorum Michx.

Panicum miliaceum Walt. Fl. Carol. 72. 1788, not L. 1753. Since Walter does not give Linnæus as authority nor use his diagnosis, this is evidently intended as a new species. No specimen of this is found in Walter's herbarium,[a] but the description indicates *P. dichotomiflorum*, which, together with Walter's name, Elliott[b] refers to *P. geniculatum* Muhl.

Panicum dichotomiflorum Michx. Fl. Bor. Amer. **1**: 48. 1803. "HAB. in occidentalibus montium *Alleghanis*." The type is in the herbarium of Drake de Castillo. It was sent by Richard, having been collected by Michaux "ad occidentum montium Alleghanis." The specimen of this in the Michaux Herbarium is labeled "in regione Illinoensium." Both of these specimens are the common glabrous form of the United States as represented by Chase in Kneucker, Gram. Exs. no. 546.

Panicum geniculatum Muhl. Cat. Pl. 9. 1813. Based on *P. dichotomiflorum* Michx. The specimen in the Muhlenberg Herbarium is in folio 181, marked "Panicum geniculatum (dichotomiflorum) M. 114."

Panicum aquaticum Poir. in Lam. Encycl. Suppl. **4**: 281. 1816. "Cette plante croît à Porto-Ricco; elle m'a été communiquée par M. Ledru." The type, in the Cosson Herbarium, is from Porto Rico. In the description the species is compared to *P. melicarium* Michx., and the label of the type bears the abbreviated statement, "aff. P. melicario Mich." In the Desvaux Herbarium there is a similar specimen from the Antilles, labeled "P. aquaticum Desv. in Poir. Enc. Suppl." In both specimens the spikelets are nearly 3 mm. long as in *Wright* 3861. In the original publication there is no indication that Desvaux is the author of the species. This name was erroneously referred by Hitchcock[c] to *P. elephantipes*. The fruit is not acuminate as in that species

Panicum multiflorum Poir. in Lam. Encycl. Suppl. **4**: 282. 1816. "Cette plante croît à la Caroline; elle m'a été communiquée par M. Bosc." We take the specimen labeled "bosc. caroline," in the Cosson Herbarium, to be the type. Another specimen of the same collection is in the Desfontaines Herbarium. It is labeled, "Am. Sept. Bosc," and also "Panicum brachiatum Bosc." These are the typical form.

Panicum brachiatum Bosc; Spreng. Syst. Veg. **1**: 321. 1825, not Poir. 1816. The locality given by Sprengel is "*Ins. Bermud.*" As indicated above, the specimen of *P. multiflorum* from Bosc is labeled *P. brachiatum* Bosc. There is also in the Delessert Herbarium a specimen so labeled, collected in South Carolina by Bosc. We have seen no specimen of Bosc's from the Bermudas, the published locality, and we find no record that Bosc visited the Bermudas. The meager description applies to *P. dichotomiflorum*.

Panicum chloroticum Nees; Trin. Gram. Pan. 236. 1826. Trinius describes a variety "α (*agreste N. ab Es.*)" which is the equivalent of the species, and "β (*sylvestre N. ab Es.*)," both from Brazil, "V. utriusque spp. Brasil (N. AB ESENB. LANGSDORFF)." The latter differs in having a more open panicle, larger spikelets, and narrower leaves. Nees[d] described the same species later, with three varieties,

---

[a] For an account of Walter's grasses see Hitchcock, Rep. Mo. Bot. Gard. **16**: 31–56. 1905.

[b] Bot. S. C. & Ga. **1**: 117. 1816.

[c] Contr. Nat. Herb. **12**: 218. 1909.

[d] Agrost. Bras. 164. 1829.

α agreste, the equivalent of the species, "Habitat in graminosis cultis prope Soteropolin et Oeiras provinciae Bahiensis et Piauhiensis;" *β sylvestre*, "Habitat in sylvis ad Almada, Ferradas et in via Felisbertia districtus Insulanorum prov. Bahiensis, (Martius et Maximil. Princ. Neovid.);" *γ pingue*, "Habitat in cultis ad Soteropolin, provinciae Bahiensis." Specimens of none of these could be found in the Trinius Herbarium, and therefore the specimens described by Nees, which are in the Munich Herbarium, may be considered the types. These are all labeled with the published data as given above. The types of *agreste* and *pingue* are similar, having broad blades and rather dense panicles of small spikelets 2.2 to 2.3 mm. long as in *Chase* 4234 from Florida and *Morong* 543 from Paraguay. The type of variety *sylvestre* differs in having narrow and shorter blades, smaller, more open panicle, and larger spikelets about 3 mm. long as in *Riedel* 959 from Brazil. This form may prove to be a distinct species. None of the specimens shows the base of the plant. Kunth[a] erroneously refers variety *sylvestre* to *Panicum brachiatum* Poir., which is a species of Chaetochloa.

Panicum elliottii Trin.; Nees, Agrost. Bras. 170. 1829. This is mentioned as a synonym under *P. proliferum* Lam. which latter name Nees applies to *P. dichotomiflorum* Michx. The type was not found in the Trinius Herbarium nor at Munich.

Panicum retrofractum Delile; Desv. Opusc. 96. 1831. Desvaux gives no locality other than "America borealis." The type, in the Jussieu Herbarium, is from "Caroline," and is the typical form.

Panicum hygrophilum Salzm.; Steud. Syn. Pl. Glum. 1: 71. 1854. "Bahia." In the National Herbarium is a specimen labeled *P. hygrophilum* Salzm. from Bahia, which agrees with Nees's variety *sylvestre*. There is a specimen of the same in Van Heurck's herbarium, where is located the original set of Salzmann, and duplicates in Hackel's and other European herbaria, but we do not know which specimen was seen by Steudel.

Panicum proliferum pilosum Griseb. Cat. Pl. Cub. 232. 1866. "Wr[ight] a. 1865, ad lagunas." The type, in the Grisebach Herbarium, is labeled, "Around lagunas in wet or damp ground, Hanabana," no. 186. This is a small plant with spreading or decumbent culms, papillose-hispid sheaths and blades villous above. Nash's no. 567 from Eustis, Florida, is similar to this but has somewhat larger spikelets.

Panicum proliferum strictum Griseb. Cat. Pl. Cub. 232. 1866. "Wr[ight] 3456." The type, Wright's no. 3456 from Cuba, is in the Grisebach Herbarium. The spikelets are about 3 mm. long, the sheaths smooth, the blades villous above.

Panicum proliferum geniculatum Wood, Bot. & Flor. 392. 1874. This is probably based on *P. geniculatum* Ell., though that name is not mentioned; no locality nor specimen is cited. Vasey[b] makes the same combination, basing it upon *P. geniculatum* Ell.

Panicum amplectans Chapm. Bot. Gaz. **3**: 20. 1878. "South Florida." The type, in the Chapman Herbarium at Biltmore, was collected by Blodgett.

Panicum francavillanum Fourn. Mex. Pl. **2**: 25. 1886.[c] "Tacabaya (SCHAFFN[ER]

---

[a] Enum. Pl. **1**: 155. 1833.

[b] Grasses U. S. 12. 1883.

[c] The date given on the title-page of this work is 1886. A set of proof sheets was supplied to Bentham in 1880 and is referred to by the latter author in his paper, Notes on Gramineae, read November 3, 1881, and published in the Journal of the Linnaean Society (Botany **19**: 14–134. 1881). Fournier's names are also cited by Hemsley (Biol. Centr. Amer. **3**: 1885), to which work they are referred by the Index Kewensis, but the names are there usually nomina nuda. The proof sheets mentioned above are in the library at Kew, marked, "Proof sheets of Mr. Fournier Gramineae, 1881. From Mr. Bentham." They are stamped, "1re Epreuve 18 Mai 1880." Bentham says of these (Notes on Gramineae, p. 20), "Eugène Fournier's 'Enumeration of

n. 301)." The type is in the herbarium of Drake de Castillo. The name was earlier mentioned by Hemsley.[a]

Panicum proliferum chloroticum Hack. in Repert. Nov. Sp. Fedde **7**: 343. 1909. Based on *P. chloroticum* Nees.

This species was referred by Pursh,[b] as it has been by most later authors, to *P. proliferum* Lam. The latter is, however, the same as *P. miliare* Lam., an Old World species.

DESCRIPTION.

Plants usually freely branching, ascending or spreading from a geniculate base, or sometimes erect, usually smooth throughout, or, in tropical forms, more or less pubescent; culms somewhat compressed, often thick and succulent, drying furrowed, usually 50 to 100 cm. long, in robust specimens as much as 2 meters long, the nodes smooth, at least the lower swollen; sheaths often compressed, usually longer than the internodes, ciliate on the margin toward the summit; ligules 1 to 2 mm. long; blades flat or in small specimens sometimes folded, glabrous or sparsely pilose above, 10 to 50 cm. long, 3 to 20 mm. wide, at base about as wide as sheath, the white midnerve usually prominent; panicles terminal and axillary, included at base or tardily short-exserted, many-flowered, 10 to 40 cm. long or more, the main branches ascending, or finally spreading or even reflexed, the short branchlets appressed, bearing short-pediceled, often rather crowded spikelets, the axes angled and scabrous; spikelets narrowly oblong-ovate, 2 to 3.2 mm., usually about 2.5 mm. long, about 0.9 mm. wide, acute, often greenish purple; first glume one-fifth to one-fourth the length of the spikelet, truncate or broadly triangular; second glume and sterile lemma more or less pointed beyond the fruit, rather faintly 7-nerved, the palea of the sterile floret present or wanting; fruit 1.8 to 2 mm. long, about 0.8 mm. wide, elliptic.

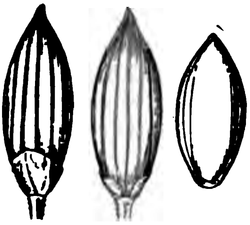


FIG. 31.—*P. dichotomiflorum*. From specimen of *P. geniculatum* Muhl. in Elliott Herbarium.

This species as it occurs in the United States is usually glabrous throughout but varies much in the size of the blades and of the spikelets, the latter varying from 2 to 3.2 mm. in length. Not uncommonly specimens occur with the upper surface of some or all of the blades sparsely or even densely pilose, such as: CONNECTICUT, *Wilson* 1248; NEW YORK, *Young* in 1872; PENNSYLVANIA, *Heller* in 1900; DELAWARE, *Commons* 230; KANSAS, *Carleton* in 1892; FLORIDA, *Chase* 4294, *Combs* 94, 1251. One series of specimens from Florida, *Nash* 567,[c] is low, 20 to 30 cm. high, with narrow blades pubescent above, and papillose-hispid sheaths. Nash's no. 372 from the same locality is glabrous throughout, except the ciliate margin of the sheaths, but otherwise is the same as his no. 567. Two Cuban specimens, *Hitchcock* 149 and *Wright* 3860, are like Nash's no. 567. Many of the West Indian specimens have blades pilose above, some of which have spikelets about 2 mm. long and others about 3 mm. long. Such are: *Brace* 3742, *Britton & Cowell* 432, *Curtiss* 177, *Duss* 3178, *Eggers* 4405, 4512, *Geogr. Soc. Baltimore* 489, *Hitchcock* 150, *Wright* 3861. The South American specimens cited are glabrous. Those from Arechavaleta and *Morong* 543 have small spikelets as in the

---

Mexican Gramineae' is not yet published; but being already printed off and M. Fournier having obligingly supplied me with a copy, I feel bound in so far as I am concerned, to treat it as having already taken date." The Kew copy ends with page 150 and lacks index, title-page, and plates.

[a] Biol. Centr. Amer. Bot. **3**: 489. 1885.

[b] Fl. Amer. Sept. **1**: 68. 1814.

[c] This number was distributed under an unpublished varietal name.

type of *P. chloroticum*, while *Morong* 1002 and *Riedel* 959 have spikelets 3 mm. long, as in the type of *P. chloroticum β sylvestre*.

These different variations in pubescence, size of spikelet, and habit can not be in any way correlated and each is connected by intergrading specimens with the typical form. Nor has any variation a separate geographical range, though specimens with pilose blades are commoner in the West Indies than elsewhere.

The specimens cited below from Brazil have larger spikelets. They belong to the form mentioned above under *P. chloroticum* as variety *sylvestre*.

DISTRIBUTION.

Moist ground, along streams, and a weed in waste places and cultivated soil, Maine to Nebraska, south to Florida and Texas; also in California, Mexico, the West Indies, and South America to Uruguay.

MAINE: North Berwick, *Parlin* in 1891 (Gray Herb.).

MASSACHUSETTS: Cambridge, *Morong* in 1876; Newburyport, *Leavitt & Eaton* in 1902; Plymouth, *Oakes*.

CONNECTICUT: Stamford, *Driggs* 8; South Glastonbury, *Wilson* 1248; Bridgeport, *Eames* in 1895.

NEW YORK: Northville, *Young* in 1872 (Hitchcock Herb.).

NEW JERSEY: Clifton, *Nash* in 1891; Weehauken, *Van Sickle* in 1895; Freehold, *Pearce* in 1884.

PENNSYLVANIA: Easton, *Porter* in 1895; Chambersburg, *Porter* in 1898; Westmoreland County, *Pierron* in 1877; Lancaster County, *Heller* in 1900.

OHIO: Niles, *Ingraham* in 1891; Sheffield, *Ricksecker* in 1894.

INDIANA: Wells County, *Deam* in 1903; Lafayette, *Dorner* 23, 86.

ILLINOIS: Chicago, *Moffatt* 374, *Umbach* in 1896; Pine Rock, *Waite* in 1885; Peoria, *Brendel*, *McDonald* 71; St. Clair County, *Eggert* 110.

IOWA: Mount Pleasant, *Mills* in 1894; Jefferson, *Wilcox* 27; Manchester, *Ball* 39; Murray, *Morris* A 287; Fayette County, *Fink* 409.

NEBRASKA: Talmage, *Elmore* 71; without locality, *Holmes* in 1889.

MISSOURI: Courtney, *Bush* 10 in 1892.

KANSAS: Topeka, *Smyth* 331; Riley County, *Hitchcock* 3838, *Norton* 567, *Carleton* in 1892.

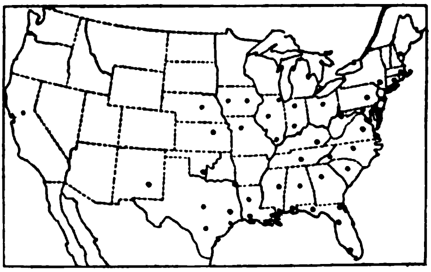


FIG. 32.—Distribution of *P. dichotomiflorum*.

DELAWARE: Wilmington, *Commons* 229, 230, *Canby* in 1896.

MARYLAND: Garrett County, *Smith* in 1879.

DISTRICT OF COLUMBIA: *Chase* in Kneucker Gram. Exs. 546, *McCarthy* in 1886, *Pollard* 682, *Steele* in 1896, *Vasey* in 1887, *Ward* in 1876, *Williams* in 1896.

VIRGINIA: Virginia Beach, *Hitchcock* 217; Gravelly Run, *Ward* in 1886.

WEST VIRGINIA: Aurora, *Steele* in 1898; Tygarts Valley, *Smith* in 1879.

NORTH CAROLINA: Chapel Hill, *Ashe;* West Raleigh, *Stanton* 1280; Biltmore, *Biltmore Herb.* 702a; Magnetic City, *Wetherby* 19.

SOUTH CAROLINA: Lexington, *Corley* in 1879; St. Helena Island, *Cuthbert* in 1904.

GEORGIA: Dalton, *Harper* 382; Augusta, *Kearney* 208.

FLORIDA: Duval County, *Fredholm* 395; Lake City, *Chase* 4234, *Combs* 94; Eustis, *Nash* 372, 567, 874; Crystal, *Combs* 990; Manatee, *Chapman*, *Combs* 1251.

KENTUCKY: Bell County, *Kearney* 374.

TENNESSEE: Knoxville, *Ruth* 71; Cocke County, *Kearney* 966; Nashville, *Gattinger* in 1879.

Alabama: Mobile, *Mohr* in 1878; Deatsville, *Pollard & Maxon* 307.

Mississippi: Starkville, *Kearney* 9, 18; Nicholson, *Kearney* 372 in part; Biloxi, *Tracy* 4618, 6507; Mississippi City, *Tracy* 77.

Louisiana: Calhoun, *Ball* 67; McCall, *Combs* 1436; Burnside, *Combs* 1419; Coushatta, *Ball* 135; Natchitoches, *Ball* 139, 164; Rayville, *Ball* 31, 24; Oberlin, *Ball* 215, 229; South Pass, *Tracy & Lloyd* 471; Baton Rouge, *Joor* 25; Lake Charles, *Chase* 4392; without locality, *Langlois* 29.

Texas: Houston, *Hall* 817; Waller County, *Thurow* in 1898 and 1903; Texarkana, *Heller* 4210, 4246; Clarksville, *Plank* 8; Llano, *Plank* 18 in part; Kerrville, *Heller* 1883 in part; Santa Maria, *Nealley* in 1889; without locality, *Joor*, *Nealley* in 1886.

Oklahoma: False Washita, *Palmer* 375 in 1868.

New Mexico: Las Cruces, *Plank* 29.

California: Fresno, *Bioletti* 140.

Mexico: Head of Mazatlan River, *Wright* 1317 (Gray Herb.).

Bermudas: Hamilton, *Millspaugh* Pl. Utow. 126.

Bahamas: Hog Island, *Eggers* 4405, 4512; Nassau, *Curtiss* 177; Cat Cay, *Brace* 3742; Watlings, *Geogr. Soc. Baltimore* 489.

Cuba: Herradura, *Tracy* 9055, 9342; Santiago de las Vegas, *Hitchcock* 151; Batabano, *Hitchcock* 150; Guanabacoa, *León* 919; without locality, *Wright* 3456, 3860 in part, 3861.

Porto Rico: Utuado, *Britton & Cowell* 432.

Leeward Islands: Guadeloupe, *Duss* 3178.

Brazil: Bahia, *Salzmann;* without locality, *Riedel* 959.

Paraguay: *Morong* 543, 1002 in part.

Uruguay: Montevideo, *Arechavaleta*.

18. **Panicum bartowense** Scribn. & Merr.

Panicum bartowense Scribn. & Merr. U. S. Dept. Agr. Div. Agrost. Circ. **35:** 3. 1901. "Type specimen collected in wet, reclaimed swamps at Bartow, Polk County, Fla. No. 1220, Robert Combs, September 29, 1898." The type, in the National Herbarium, is an erect, simple plant about 1.75 meters high, with conspicuously hispid sheaths and nearly glabrous blades, the spikelets about 2.5 mm. long.

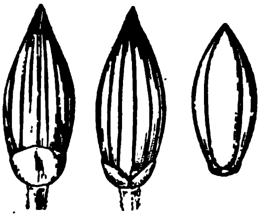


Fig. 33.—*P. bartowense*. From type specimen.

DESCRIPTION.

Plants simple or sparingly branching, as much as 2 meters high, erect; culms glabrous, the larger as much as 7 mm. thick; sheaths mostly longer than the internodes, papillose-hispid; ligules 2 to 3 mm. long, the ciliæ more or less segregated in tufts; blades 15 to 40 cm. long, 5 to 13 mm. wide, glabrous or more or less pilose above, rarely sparsely hispid beneath, rather prominently papillose on the margin near the round but scarcely cordate base; panicles large and finally loosely spreading, 15 to 60 cm. long, the branches at first ascending, finally spreading, the short branchlets and short-pediceled spikelets appressed as in *P. dichotomiflorum;* spikelets 2.2 to 2.7 mm. long, the glumes and fruit as in *P. dichotomiflorum*.

This species is closely allied to *P. dichotomiflorum*, and may be only an extreme form of that species. As limited here, it differs in having tall, erect, simple, or nearly simple culms and papillose-hispid sheaths. The blades are usually pilose above, though the type specimen has nearly glabrous blades, but this is the case with some of the specimens referred to *P. dichotomiflorum*. A few specimens mentioned under the latter species have papillose-hispid sheaths, but are low branching plants with the habit of that species rather than of *P. bartowense*. Although most of the specimens cited below are erect and simple, one, *Chase* 3850, is much branched and spreading at the base like *P. dichotomiflorum*, and it is possible that the erect, simple habit has no special significance as a specific character.

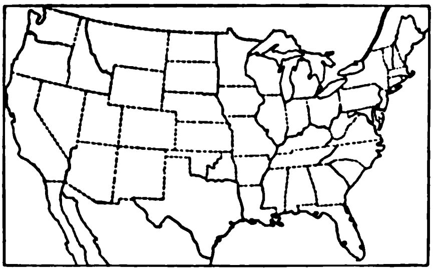


FIG. 34.—Distribution of *P. bartowense*.

DISTRIBUTION.

Low ground, often growing in shallow water, Florida and the Bahamas.

FLORIDA: Homosassa, *Combs* 971; Titusville, *Chase* 4007; Manatee, *Tracy* 6691; Braidentown, *Tracy* 7738; Palma Sola, *Tracy* 7740; Bartow, *Combs* 1220; Myers, *Hitchcock* Lee Co. Pl. 483; Palm Beach, *Curtiss* 5386; Little River, *Eaton* 467; Miami, *Chase* 3850, *Eaton* 164 in part, *Hitchcock* 648, 658, 697; without locality, *Simpson* in 1889.

BAHAMAS: Great Bahama, *Britton & Millspaugh* 2706; North Bimini, *Brace* 3467 (all in Field Mus. Herb.).

19. Panicum elephantipes Nees.

Panicum elephantipes Nees, Agrost. Bras. 165. 1829. "*Habitat in sylvis udis archipelagi Paraënsis.*" The type, in the Munich Herbarium, labeled as above, consists of a large detached panicle, a leaf, and a few inches of a culm.

Panicum fistulosum Hochst.; Steud. Syn. Pl. Glum. 1: 71. 1854. The locality mentioned is, "Surinam" and the specimen cited is "Hrbr. *Kappler* nr. 1434." A specimen of *Kappler* 1434 was examined at the Florence Herbarium and another at Stockholm. As no specimen of this number was found among the Steudel plants at Paris, we are unable to locate the type.

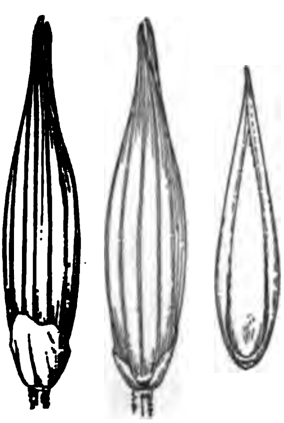


FIG. 35.—*P. elephantipes*. From type specimen.

In India is found a similar species, described in Hooker's Flora of India[a] as *P. proliferum* (*P. paludosum* Roxb.) which, judging from the specimens in the U. S. National Herbarium, is a smaller plant, with small, tardily exserted panicles 10 to 15 cm. long.

DESCRIPTION.

Culms ascending from a decumbent, often widely creeping base, rooting at the nodes, succulent, as much as 2 cm. thick, apparently a meter or more high, glabrous, the nodes glabrous, usually conspicuously dark colored; sheaths glabrous, longer than the internodes, loose, the lower often tesselated by cross partitions between the nerves; ligules about 3 mm. long; blades 15 to 50 cm. long, 7 to 20 mm. wide, glabrous beneath, pilose above, at least near the base; panicles large and open, as much as 40 cm. long, the short branchlets appressed along the ascending branches; spikelets 4 to 5 mm. long, lanceolate, acuminate; first glume one-fifth to one-fourth the length of the spikelet, subacute or obtuse, rarely pointed and one-third the length of the spikelet; second glume and sterile lemma subequal, 7 to 9-nerved, the palea of the sterile floret wanting; fruit 3 to 4 mm. long, about 0.8 mm. wide, lanceolate, acuminate, the margins of the lemma above the middle thin and not inrolled.

---

[a] Fl. Brit. Ind. 7: 50. 1896.

This large, succulent, semi-aquatic, apparently annual species, often producing dense masses of roots at the submerged nodes, is readily distinguished from *P. dichotomiflorum* by the acuminate fruit. The Mexican specimens cited below have narrower blades than the others and none show the basal portion, but the floral characters agree with the type, except that the fruit is more turgid and less acuminate.

DISTRIBUTION.

In ponds and shallow water, West Indies and southern Mexico, south to Argentina. An introduced specimen was collected in North Carolina, "Eastern part of state along seacoast," by *McCarthy* in 1898.

MEXICO: Near Mexico City, *Bourgeau* 529, *Pringle* 6322,[a] 9577.[a]

GUATEMALA: Alta Vera Paz, *Goll* 35A.

CUBA: San Antonio, *Hitchcock* 152; Habana, *León* 335.

PORTO RICO: Fajardo, *Sintenis* 938.

PARAGUAY: *Morong* 1002 in part.

URUGUAY: Montevideo, *Arechavaleta* in 1876, without locality, *Arechavaleta* in 1892.

ARGENTINA: Lagos de la Darsesso, Buenos Aires in 1892, name of collector not given.

Capillaria.—Annuals; papillose-hispid at least on the sheaths, or rarely glabrous, ligules membranaceous, ciliate, 1 to 3 mm. long; panicles many-flowered; more or less diffuse, often breaking away at maturity and rolling before the wind; spikelets pointed, glabrous, the first glume large and clasping, the fruit often falling from the spikelet before the disarticulation of the latter, smooth and shining, usually olive brown at maturity, the nerves showing as faint pale lines.

- Panicles more or less drooping.
  - Spikelets not over 3.5 mm. long; Mexican species...... 28. *P. sonorum.*
  - Spikelets 4.5 to 5 mm. long; introduced from Old World. 30. *P. miliaceum.*
- Panicles erect.
  - Inflorescence elongated, composed of several approximate, implicate panicles.............................. 31. *P. cayennense.*
  - Inflorescence not composed of approximate nor implicate panicles.
    - Panicles more than half the length of the entire plant.
      - Panicles narrow, usually less than half as broad as long.............................. 20. *P. flexile.*
      - Panicle as broad as long.
        - Spikelets 2 to 2.2, rarely 2.5 mm. long; blades not crowded toward the base. 23. *P. capillare.*
        - Spikelets 3 to 3.3, rarely only 2.5 mm. long; blades usually crowded toward the base.............................. 24. *P. barbipulvinatum.*

---

[a] These numbers were distributed as a variety of *P. proliferum* Lam., the varietal name being unpublished.

- Panicles not more than one-third the entire height of the plant.
  - Spikelets not over 2 mm. long, acute but not long-acuminate.
    - Culms stout; blades about 1 cm. wide; spikelets turgid...................... 21. *P. gattingeri.*
    - Culms slender; blades not over 6 mm. wide; spikelets not turgid.................. 22. *P. philadelphicum.*
  - Spikelets 2.7 to 6 mm. long, acuminate.
    - First glume about one-third the length of the spikelet, subacute or blunt........... 27. *P. stramineum.*
    - First glume usually more than half the length of the spikelet, acuminate.
      - Spikelets 4.5 to 6 mm. long.
        - Spikelets 6 mm. long, scattered.. 29. *P. parcum.*
        - Spikelets scarcely over 5 mm. long, approximate......... 26A. *P. decolorans.*
      - Spikelets not over 4 mm. long.
        - First glume more than three-fourths the length of the spikelet; spikelets 4 mm. long........ 26. *P. pampinosum.*
        - First glume half to two-thirds the length of the spikelet; spikelets not over 3.3 mm. long... 25. *P. hirticaule.*

20. **Panicum flexile** (Gattinger) Scribn.

Panicum capillare flexile Gattinger, Tenn. Fl. 94. 1887. "Characteristic of the cedar glades." In the Gattinger Herbarium are two specimens labeled "*Panicum capillare* L. var. *flexile* Gattinger" in Gattinger's hand. The larger specimen is chosen as the type. This is labeled "Cedar glade near Nashville, Sept. '88. A. Gattinger."

Panicum flexile Scribn. in Kearney, Bull. Torrey Club **20**: 476. 1893. Based on *P. capillare flexile* Gattinger.

Panicum minus Nash, Bull. Torrey Club **22**: 421. 1895. Based on "*Panicum capillare* var. *minus* Muhl.," though Nash's description applies to *P. philadelphicum.*

Scribner and Merrill [a] applied to this species the name *P. philadelphicum* Bernh., but this name belongs to a different species. Muhlenberg [b] describes *P. flexile* as a variety of *P. capillare*, but without giving a varietal name, saying, "Varietas minor occurrit ubique in cultis magis aridis," and following this by a description. This specimen in the Muhlenberg Herbarium is labeled, "183 Panicum capillare var. minor."

Pursh [c] describes *P. flexile* under the name of *P. diffusum* Swartz. It was also described by Trinius [d] as *P. capillare β* Panicula depauperata.

DESCRIPTION.

Plants erect, much branched from the base, 20 to 70 cm. high; culms slender, glabrous, or somewhat hispid below, nodes pubescent; sheaths papillose-hispid, the hairs shorter than in *P. capillare;* blades erect but not stiff, glabrous or sparsely hispid, as much as 30 cm. long, 2 to 6 mm. wide, rarely narrower; panicles rather few-flowered, oblong, narrow, 10 to 20 cm., rarely 30 cm. long, about one-third as wide, the branches at first narrowly ascending, somewhat spreading at maturity, the peduncle of the panicle not brittle and readily breaking as in *P. capillare;* spikelets long-pediceled, 3.1 to 3.5 mm. long, 0.9 to 1 mm. wide, lanceolate, acuminate; first glume about one-third the length of the spikelet; second glume slightly longer than the sterile lemma, both 7 to 9-nerved, much exceeding the fruit, the palea of the sterile floret wanting; fruit 2 mm. long, 0.9 mm. wide, elliptic.

---

[a] U. S. Dept. Agr. Div. Agrost. Circ. **27**: 3. 1900. A discussion of "The grasses in the Herbarium of Dr. H. Muhlenberg."

[b] Descr. Gram. 124. 1817.

[c] Fl. Amer. Sept. **1**: 68. 1814.

[d] Gram. Pan. 215. 1826. See note under *P. philadelphicum*, p. 58.

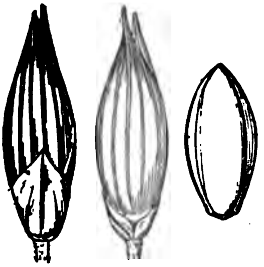


FIG. 36.—*P. flexile.* From type specimen.

This species is distinguished from *P. capillare* by the more slender culms, less dense pubescence, narrower blades, the narrow, less diffuse panicles and the longer, acuminate spikelets; and from *P. philadelphicum* by the narrow panicle and larger, acuminate spikelets.

DISTRIBUTION.

Sandy, mostly damp soil, meadows and open woods, Ontario to South Dakota, south to Florida and Texas.

- ONTARIO: Sarnia, *Dodge* 128, 130, *Macoun* 26332; St. Clair River, *Dodge* 124; Birch Island, *Macoun* 26331; Point Edward, *Macoun* 26330.
- PENNSYLVANIA: Lancaster County, *Heller* 701, 4777, 4786, *Porter* in 1862, *Small* in 1890 and 1892.
- OHIO: Erie County, *Moseley* in 1895; Columbus, *Werner* 6777.
- INDIANA: Clarke, *Umbach* in 1898.
- ILLINOIS: Chicago, *Bebb* 2928, *Chase* 1474, 1479, 1729, 2006, *Hill* in 1901; *Ingraham* in 1893; Beach, *Umbach* 2543; St. Clair County, *Eggert* 241.
- MICHIGAN: Port Huron, *Dodge* in 1909; Orion, *Farwell* 893; Jackson County, *Wheeler* in 1892.
- SOUTH DAKOTA: Stearns, *Wallace* 46.
- IOWA: Cedar Rapids, *Pammel* in 1889 (Mo. Bot. Gard. Herb.).
- MISSOURI: Glenwood, *Bush* 3295; St. Louis, *Eggert* in 1875; Dodson, *Bush* 848; Eagle Rock, *Bush* 384; Noel, *Bush* 5259.
- DISTRICT OF COLUMBIA: *Steele* in 1896 and 1898.
- VIRGINIA: Four-Mile Run, *Chase* 5444.
- WEST VIRGINIA: Peters Mountain, *Steele* 281.
- FLORIDA: Without locality, *Curtiss* in 1886.
- KENTUCKY: Bell County, *Kearney* 312.
- TENNESSEE: Knoxville, *Kearney* in 1893, *Ruth* 66; Johnson City, *Canby* 221; Cocke County, *Kearney* 960; Nashville, *Gattinger* in Curtiss N. Amer. Pl. 3581 J, 3582a, and J.
- ALABAMA: Monte Sano, *Baker* in 1897; Jackson County, *Chase* 4492.
- MISSISSIPPI: Starkville, *Chase* 4453, *Kearney* 72, 88 in part.
- ARKANSAS: Benton County, *Plank* 12, 107; Fulton, *Bush* 906.
- TEXAS: Clarksville, *Plank* 6, 10 in part.

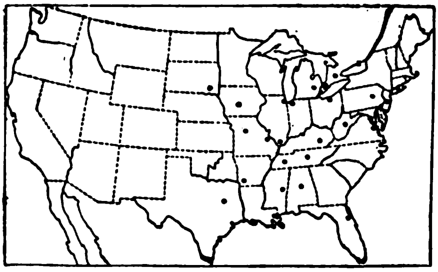


FIG. 37.—Distribution of *P. flexile.*

21. Panicum gattingeri Nash.

Panicum capillare campestre Gattinger, Tenn. Fl. 94. 1887, not *P. campestre* Nees, 1826. No definite locality in Tennessee is given. In the Gattinger Herbarium are four specimens very much alike labeled "*Panicum capillare* L. var. *campestre* Gattinger" in Gattinger's hand. The specimen with the following data is chosen as the type: "Cedar glades near Nashville, Sept. A Gattinger."

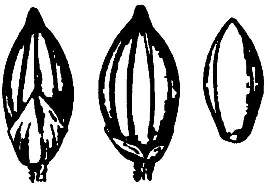


FIG. 38.—*P. gattingeri*. From type specimen.

Panicum capillare geniculatum Scribn. in Kearney, Bull. Torrey Club **20**: 447. 1893, not *P. geniculatum* Lam. 1798. "In the neighborhood of Wasiota," [Bell County, Kentucky]. No type is indicated. Kearney (on page 479) lists numbers 317, 335, 378, 497 as *P. capillare geniculatum*. A sheet of Kearney's no. 378, collected near Wasiota, Bell County, Kentucky, in 1893, in the National Herbarium, and evidently the only one of the cited series examined by Scribner, is taken as the type.

Panicum capillare gattingeri Nash in Britt. & Brown, Illust. Fl. 1: 123. 1896. Based on *P. capillare campestre* Gattinger.

Panicum gattingeri Nash in Small, Fl. Southeast U. S. 92 and 1327. 1903. Based on *P. capillare campestre* Gattinger.

DESCRIPTION.

Plants at first erect, but soon decumbent-spreading and rooting at the lower nodes, freely branching from the lower and middle nodes; culms papillose-hispid, in robust specimens as much as 1 meter in length; sheaths hispid like the culms; blades 10 to 20 cm. long, 6 to 10 mm. wide, narrow to a rounded base, more or less hispid on both surfaces or nearly glabrous; panicles numerous, terminating the culms and main branches and auxillary at most of the nodes, short-exserted or, especially the axillary, included at base, oval or elliptic in outline, the terminal 10 to 15 cm. long, two-thirds as wide, the lateral smaller, rather densely flowered, the branches ascending or tardily spreading; spikelets shorter-pediceled than in *P. capillare* and more turgid, 2 mm. long, 0.9 to 1 mm. wide, elliptic; first glume about two-fifths as long as the spikelet, acute or blunt; second glume and sterile lemma equal, 5-nerved, but slightly exceeding the fruit, the palea of the sterile floret wanting; fruit 1.6 mm. long, 0.8 mm. wide, elliptic.

This species differs from *P. capillare* in the branching, spreading habit, and the numerous panicles, oval in outline and less diffuse, produced from all the nodes. The spikelets in *P. gattingeri* are not so variable in length as in the other species in this group.

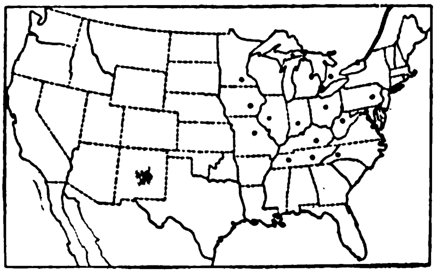


FIG. 39.—Distribution of *P. gattingeri*.

DISTRIBUTION.

Open ground and waste places, often a weed in cultivated soil, Pennsylvania to Iowa and Missouri, south to North Carolina and Tennessee.

This is the form introduced into South Africa and described by Stapf as *P. capillare*.[a]

ONTARIO: Kingston, *Fowler* in 1897 (Field Mus. Herb.).

PENNSYLVANIA: Lancaster County, *Heller* in 1901.

---

[a] Dyer, Fl. Cap. 7: 407. 1898.

Ohio: Sheffield, *Rickseeker* in 1894; Cincinnati, *Lloyd* in 1883.

Indiana: Lafayette, *Dorner* 87.

Illinois: Peoria, *Brendel;* Wady Petra, *V. H. Chase* 124 in 1897, 783; Canton, *Wolf* in 1882.

Minnesota: Hennepin County, *Sandberg* in 1890 (Univ. Cal. Herb.).

Iowa: Emmett County, *Pammel & Cratty* 850.

Missouri: Sugar Creek, *Bush* 4824; Monteer, *Bush* 5116.

Maryland: Bethesda, *Steele* in 1899; Plummers Island, *Steele* in 1897; Cabin John, *Chase* 2628.

District of Columbia: *Hitchcock* 167, *Williams* in 1900.

Virginia: Arlington, *Chase* 5443.

West Virginia: Aurora, *Steele* in 1898.

North Carolina: Magnetic City, *Wetherby* 21.

Kentucky: Bell County, *Kearney* 378.

Tennessee: Cocke County, *Kearney* 962, 963; Knoxville, *Ruth* 59 in part; Nashville, *Gattinger*.

22. Panicum philadelphicum Bernh.

Panicum capillare sylvaticum Torr. Fl. North. & Mid. U. S. 149. 1824, not *P. sylvaticum* Lam. 1798. "In dry woods near New York." The type is in Columbia University Herbarium.

Panicum philadelphicum Bernh.; Trin. Gram. Pan. 216. 1826. This is mentioned by Trinius as a variety of *P. capillare*, similar to his β [*P. flexile*], but with spikelets only acute [not acuminate as in the others], "misit s. n. *Pan. philadelphici sibi* cl. Bernhardi." Enough description is given to technically constitute publication. Nees later[a] describes the species more fully. The type, in the Trinius Herbarium, is from Philadelphia, sent by Bernhardi. On the same sheet is a specimen of *P. flexile* from the same source, but a drawing by Trinius with the name of *P. philadelphicum* indicates which specimen is the type.

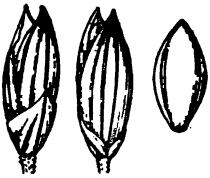


Fig. 40.—*P. philadelphicum*. From duplicate type specimen in Stockholm Herbarium.

Panicum porphyrium Trin.; Nees, Agrost. Bras. 198. 1829. This is given as a synonym under *P. philadelphicum* Bernh. We have not seen the type.

Panicum torreyi Fourn. in Hemsl. Biol. Centr. Amer. Bot. **3**: 497. 1885. Based on *P. capillare sylvaticum* Torr. Fournier's description[b] does not apply to this species and a specimen in the Fournier Herbarium, cited by him under this name, is *P. bulbosum*.

Panicum capillare minimum Engelm.; Gattinger, Tenn. Fl. 94. 1887. No definite locality in Tennessee is mentioned. The type in the Gattinger Herbarium bears the name in Gattinger's writing and the data "Greenbriar, Sept. '78. A. Gattinger." This name is initialed "F. L. S." by Scribner, hence the same name published[c] later by him is also based on this specimen.

Panicum minimum Scribn. & Merr. U. S. Dept. Agr. Div. Agrost. Circ. **27**: 4. 1900. Based on *P. capillare minimum* Engelm.

Panicum soboliferum Tuckerm.; Scribn. & Merr. Rhodora **3**: 106. 1901. This is given as a synonym under *P. minimum*. Tuckerman's specimen, in the Gray Herbarium, is from "Head of Lake Memphremagog, Vt., Sept. 1859."

---

[a] Agrost. Bras. 198. 1829.

[b] Mex. Pl. **2**: 28. 1886.

[c] Tenn. Agr. Exp. Bull. **7**: 44. *pl. 10. f. 39.* 1894.

DESCRIPTION.

Plants light yellowish green, in small tufts, freely branching, erect or rarely decumbent at base, 15 to 50 cm. high, depauperate, northern specimens sometimes forming small mats; culms slender, papillose-hispid to nearly glabrous, more or less zigzig at base, the lower internodes much shortened; sheaths mostly longer than the internodes, papillose-hispid; blades erect or ascending, 4 to 15 cm. long, 2 to 6 mm. wide, rather sparsely hirsute, rarely nearly glabrous; panicles exserted, diffuse, ovoid, 10 to 20 cm. long, forming one-third the entire height of the plant or more, few-flowered, the capillary, scabrous branchlets solitary, bearing rather short-pediceled spikelets, usually in twos, at the ends; spikelets 1.7 to 2 mm. long, 0.7 mm. wide, elliptic; first glume about two-fifths the length of the spikelet, 5-nerved, acute; second glume and sterile lemma equal, only slightly exceeding the fruit, the palea of the sterile floret wanting; fruit 1.5 mm. long, 0.6 mm. wide, elliptic.

This species differs from *P. capillare* in its narrow, erect blades, more slender culms, and smaller, fewer-flowered panicles, with more divergent branches and spikelets mostly in twos. The spikelets are usually slightly smaller, but the spikelets of the type of *P. philadelphicum* and of several other specimens are 2 mm. long.

Two specimens from Stone Mountain, Georgia, *Harper* 184 and *Hitchcock* 439, have spikelets 2.2 mm. long, and are erect, narrow-leaved plants with somewhat the aspect of *P. flexile*.

DISTRIBUTION.

Dry open or sandy ground, Maine to Wisconsin and Oklahoma, south to Georgia and Mississippi.

Quebec: Chandiere River, *Macoun* 7444 (Herb. Geol. Survey Can.).
Maine: Holden, *Knight* in 1898; Mattawamkeag, *Fernald* 2802; Henderson, *Parlin* 1776.
New Hampshire: Alstead, *Fernald* 361.
Vermont: Lake Memphremagog, *Tuckerman* in 1859 (Gray Herb.).
Connecticut: Hadlyme Ferry, *Graves* 167.
Rhode Island: Lincoln, *Fernald* in 1906 (Gray Herb.).
New York: Kinderhook Lake, *Peck;* Verona, *Haberer* in 1900.
New Jersey: Lakehurst, *Mackenzie* 2366.
Pennsylvania: Lancaster County, *Heller* 4789.
Ohio: Ottawa, *Kellerman* in 1900 (Univ. Ohio Herb.).
Wisconsin: Sauk City, *Luders* in 1885; Granite Heights, *Cheney* 2911.
Missouri: Monteer, *Bush* 5119, 5120; Readings Mill, *Bush* 5203.
Delaware: Collins Beach, *Commons* in 1879.

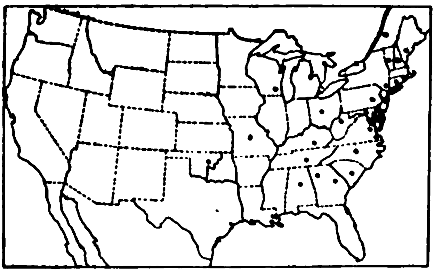


Fig. 41.—Distribution of *P. philadelphicum*.

Maryland: Glen Echo, *Kearney* in 1897; Chevy Chase, *Chase* 2599.
District of Columbia: *Chase* 5441, *Kearney* in 1897, *Steele* in 1899, *Vasey* in 1882, *Williams* 10 in part, 12.
Virginia: Four-Mile Run, *Hitchcock* 166; Alexandria, *House* 413; Portsmouth, *Chase* 3687; Craigs, *Steele* 16.
West Virginia: Aurora, *Steele* in 1898; Baileysville, *Morris* 1283.
North Carolina: Chapel Hill, *Ashe*.
South Carolina: Orangeburg, *Hitchcock* 7.
Georgia: Thomson, *Bartlett* 1024; Stone Mountain, *Harper* 184, *Hitchcock* 439.

Kentucky: Harlan County, *Kearney* 151.

Tennessee: Bluff City, *Hitchcock* 165; Cocke County, *Kearney* 961; Chester County, *Bain* in 1892.

Alabama: Cullman County, *Eggert* 58.

Oklahoma: Sapulpa, *Bush* 722 in 1894.

Texas: Dallas County, *Reverchon* 1842 (Mo. Bot. Gard. Herb.).

23. Panicum capillare L.

Panicum capillare L. Sp. Pl. 58. 1753. Linnæus gives no description of his own but bases his name upon a phrase name of Gronovius[a] which he quotes. Hence the type of *P. capillare* is the same as the type of Gronovius's species, namely, Clayton no. 454, cited by Gronovius. This specimen, in the herbarium of the British Museum, is the common form of this species with broad blades and ample panicle; the spikelets are 2 mm. long. Linnæus also cites a phrase name and a figure from Sloane[b] as a synonym, the Sloane plant, also in the British Museum, being *Panicum trichoides* Swartz. On the strength of these two citations, Linnæus gives the habitat as "Virginia, Jamaica." In the Linnæan Herbarium there is a specimen of *P. capillare* from "H. U." [Hortus Upsalensis] upon which Linnæus has written the name.

Milium capillare Moench, Meth. Pl. 203. 1794. Based on *Panicum capillare* L.

Panicum bobarti Lam. Encycl. 4: 748. 1798. Lamarck cites the following: "*Gramen paniculatum virginianum, locustis minimis Bobarti.* Moris. hist. 3. p. 202. no. 33. Ex herb. Vaill." It would seem that Lamarck is quoting the data on a specimen and not direct from Morison's History, since the name Bobart nowhere occurs in Morison's description or plate,[c] which applies to some species of Panicularia. In the Lamarck Herbarium is a fragmentary specimen of *P. capillare* bearing in Lamarck's writing the data he quotes and in addition, also in his writing, the name "panicum Bobarti, Lam. dict." Since Lamarck's description applies to this it is taken as the type.

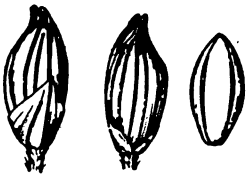


Fig. 42.—*P. capillare*. From type specimen in Gronovius Herbarium.

Panicum capillare agreste Gattinger, Tenn. Fl. 94. 1887. No definite locality in Tennessee is mentioned. The type specimen, in the Gattinger Herbarium, is labeled in Gattinger's hand "Panicum capillare L. var. agreste. Fields, Ridgetop, Sumner Co., 14. IX. '82." Collected by Dr. A. Gattinger. It is a medium-sized specimen of *P. capillare*.

Panicum capillare vulgaris[*e*] Scribn. Tenn. Agr. Exp. Sta. Bull. 7: 44. 1894. No specimen is cited and no definite locality in Tennessee is given, but Scribner states that this variety is the same as "the variety *agreste* of Dr. Gattinger."

DESCRIPTION.

Plants erect or ascending, simple or sparingly branched at the base or sometimes above, 20 to 80 cm. high; culms papillose-hispid to nearly glabrous, the pubescence dense at the nodes; sheaths usually longer than the internodes, densely papillose-hispid; blades 10 to 25 cm. long, 5 to 15 mm. wide, scarcely narrowed toward the rounded base, hispid on both surfaces, the midrib prominent; panicle densely flowered, large and very diffuse, often half the length of the entire plant, included at the base until maturity, the solitary or fascicled branches at first ascending, at maturity divaricately spreading, the whole panicle breaking away and rolling before the wind, the main axis and branches sparsely pilose, the numerous capillary, scabrous branchlets bearing long-pediceled spikelets toward their ends; spikelets 2 to 2.5 mm. long, 0.8 to 0.9 mm. wide, elliptic; first glume about half the length of the spikelet, acute, 5 to 7-nerved; second glume and sterile lemma equal, more or less acuminate beyond the fruit, the palea of the sterile floret wanting; fruit about 1.5 mm. long, 0.7 to 0.8 mm. wide, elliptic.

---

[a] Fl. Virg. 1: 13. 1739. See Hitchcock, Contr. Nat. Herb. 12: 118. 1908.

[b] Voy. Jam. 1: 115. *pl. 72. f. 3.* 1707.

[c] Moris. Pl. Hist. 3: 202. *sect. 8. pl. 6. f. 33.* 1715.

This common and widely distributed species is variable, occasional specimens approaching or intergrading with each of its closely allied species. Thus *Bush* 3318, *Chase* 2008, and *V. H. Chase* 183 are intermediate between this and *P. philadelphicum; Bush* 4138, *Gattinger*, Nashville, Tenn., in 1882, and *Steele* 243, between this and *P. gattingeri; Bebb* 2917 and *Chase* 1480 approach *P. flexile*, and *Blankinship*, Huntsville, Oklahoma in 1896, and *Griffiths* 15 and 120 approach *P. barbipulvinatum*. Besides these there is a group of rather low, freely branching specimens with fewer-flowered, divaricately branched panicles forming as much as two-thirds the entire height of the plant, and acuminate spikelets 2.4 to 2.6 mm. long, tending to be in twos as in *P. philadelphicum*. These are the following and are not cited in the general distribution. MAINE: Westbrook, *Ricker* 975; MASSACHUSETTS: South Hadley, *Cook* in 1887; PENNSYLVANIA: Williamsport, *Small & Heller* in 1890; NEW YORK: Verona, *Haberer* in 1900; ILLINOIS: Chicago, *Nelson* 3000.

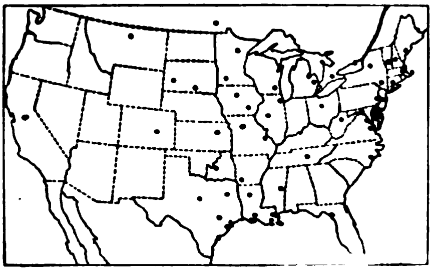


FIG. 43. Distribution of *P. capillare*.

A Florida specimen, *Combs* 665, has exceptionally turgid spikelets 2.5 mm. long.

DISTRIBUTION.

Open ground, fields and waste places, Maine to Dakota and Colorado, south to Florida and Texas; also introduced in the Bermudas.

MAINE: Bangor, *Knight* 65.
NEW HAMPSHIRE: Jaffrey, *Robinson* 396.
VERMONT: Manchester, *Day* in 1898.
MASSACHUSETTS: Boston, *Hitchcock* in 1903 (Hitchcock Herb.).
CONNECTICUT: South Glastonbury, *Wilson* 1249.
NEW YORK: New Hannibal, *Pearce* in 1883; Oxford, *Coville* in 1884.
ONTARIO: Galt, *Herriot* 69; Kingston, *Fowler* in 1897; Wilmot Center, *Umbach* in 1899; Windsor, *Macoun* 26317; Sarnia, *Morris* A 171; Belleville, *Macoun* in 1864.
NEW JERSEY: Stockholm, *Van Sickle* in 1895.
PENNSYLVANIA: Philadelphia, *Scribner* 48; *Smith* 110; Easton, *Porter* in 1894.
OHIO: Berea, *Watson* in 1897; St. Marys, *Wetzstein* in Kneucker Gram. Exs. 189; Columbus, *Kellerman* 6765.
ILLINOIS: Chicago, *Bebb* 2917, *Chase* 1480; Naperville, *Umbach* in 1898; Roberts, *Wilcox* 109; Mokena, *Chase* 2008; Wady Petra, *V. H. Chase* 125 in 1897, 183, 774.
MICHIGAN: Port Austin, *Morris* A 226.
WISCONSIN: Sauk City, *Luders* in 1885; Ashland, *Hitchcock* 5099, 5111.
MANITOBA: Killarney, *Macoun* 13225.
MINNESOTA: Spicer, *Frost* in 1892; Fort Snelling, *Mearns* 756; Montevideo, *Moyer* 43.

South Dakota: Yankton, *Bruce* 10; Aurora, *Wilcox* in 1892; Redfield, *Griffiths* 207; Huron, *Griffiths* 15; Aberdeen, *Griffiths* 120.

Iowa: Thayer, *Morris* A 252; Decatur County, *Fitzpatrick* 31; Ames, *Ball* 120; *Dudgeon* in Pammel Amer. Weeds 20; Manchester, *Ball* 720; Ledyard, *Pammel* 767.

Missouri: Creve Cœur Lake, *Kellogg* 20; Courtney, *Bush* 3318.

Kansas: Manhattan, *Hitchcock* 2380, 3842, 3851, *Norton* 568.

Delaware: Greenbank, *Commons* 30; Townsend, *Canby* in 1896.

Maryland: Garrett County, *Smith* in 1879.

District of Columbia: *Steele* in 1896; *Blanchard* in 1891.

Virginia: Arlington, *Chase* 5442.

West Virginia: Sweetsprings, *Steele* 243.

North Carolina: Wilmington, *McCarthy* in 1885.

Florida: Bay Head, *Combs* 665.

Tennessee: Knoxville, *Ruth* 59 in part; Nashville, *Gattinger* in 1882.

Alabama: Scottsboro, *Chase* 4495.

Mississippi: Starkville, *Chase* 4461, *Kearney* 80.

Arkansas: Benton County, *Plank* 84, 159.

Louisiana: Natchitoches, *Ball* 149; McCall, *Combs* 1435.

Texas: Seguin, *Plank* 99; Ennis, *Smith* in 1897; Texarkana, *Plank* 82; Dallas, *Bebb* 1299; Waller, *Thurow* in 1898; Galveston Island, *Tracy* 7409; Chillicothe, *Ball* 966.

Oklahoma: Huntsville, *Blankinship* in 1896.

Montana: Columbia Falls, *Hitchcock* 4932.

Colorado: Above Manitou, *Williams* 2184.

California: Pinegrove, *Hansen* 599.

Bermudas: *Brown & Britton* 21.

24. Panicum barbipulvinatum Nash.

Panicum capillare brevifolium Vasey; Rydb. & Shear, U. S. Dept. Agr. Div. Agrost. Bull. 5: 21. 1897, not *P. brevifolium* L. 1753. "Montana: Manhattan, on a shaded sandbar in the Gallatin River; July 19, [*Shear*] 436." The type, collected by C. L. Shear, is in the National Herbarium.

Panicum barbipulvinatum Nash in Rydb. Mem. N. Y. Bot. Gard. 1: 21. 1900. "*Panicum capillare brevifolium* Vasey * * * not *Panicum brevifolium* L." is cited, but as a description follows and a new type is indicated, "Yellowstone Park: Lower Geyser Basin, August 4, 1897, *Rydberg & Bessey, 3544* (type)," this should not be considered as primarily a change of name. The specimen, in the herbarium of the New York Botanical Garden, agrees with Shear's no. 436, mentioned above.

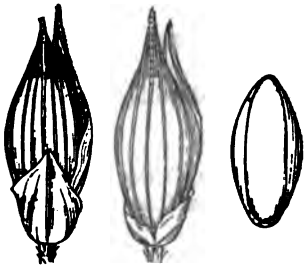


Fig. 44.—*P. barbipulvinatum.* From type specimen.

DESCRIPTION.

Plants erect, 15 to 50 cm. high, freely branching at the base, the branches often much shorter than the main culm and spreading; culms rather slender, glabrous or hispid below the nodes, the lower internodes much shortened, the nodes often somewhat geniculate; sheaths usually longer than the internodes, papillose-hispid; blades erect or erect-recurving, 3 to 15 cm. long, 3 to 12 mm. wide, longer or wider in exceptional specimens, hispid on both surfaces or sometimes nearly glabrous; panicles soon exserted, about half the length of the entire plant, rather few-flowered, the branches early divaricate, the pulvini often prominent, hispid, the axis and branches scabrous only or sometimes sparsely pilose; spikelets 2.5 to 3.3 mm. long (usually about 3 mm. long), 1 mm. wide, turgid, lanceolate-elliptic, acuminate; first glume about two-fifths the length of the spikelet, pointed, the midnerve scabrous toward the apex; second glume slightly longer than the sterile lemma, both much exceeding the fruit, 9-nerved, the nerves scabrous toward the apex, the palea of the sterile lemma wanting; fruit 1.7 to 1.8 mm. long, 0.9 mm. wide, elliptic.

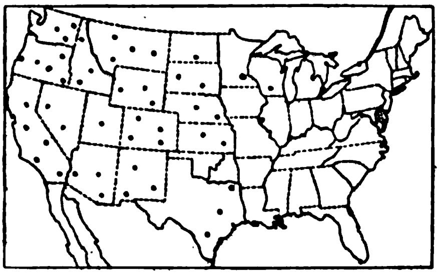


FIG. 45.—Distribution of *P. barbipulvinatum.*

This species differs from *P. capillare* in being on the average lower, in having shorter, less pubescent blades crowded toward the base of the plant, shorter, exserted panicles with divaricate branches, and larger spikelets. The plants are often depauperate and tufted and the blades sometimes white-margined.

Occasional specimens, as *Mearns* 743, *Parish* 1081 and *Rydberg* 1538, scarcely branching at the base and with longer blades, approach *P. capillare.*

DISTRIBUTION.

Open ground, waste places and cultivated fields, Wisconsin, Minnesota to British Columbia, south to Texas and southern California.

ILLINOIS: Oquawka, *Patterson.*

WISCONSIN: Madison, *Agr. Exp. Sta.* (probably transient adventive).

MINNESOTA: Fort Snelling, *Mearns* 755; Hennepin County, *Sandberg* in 1889; Duluth, *Hitchcock* 5083.

NORTH DAKOTA: Medora, *Brannon* 134, Bismarck, *Field* 1867; Devils Lake, *Hitchcock* 5050.

SOUTH DAKOTA: Hot Springs, *Rydberg* 1096; White Horse Camp, *Griffiths* 278; Cheyenne River, *Wallace* 2; Bellefourche, *Griffiths* 399; Huron, *Griffiths* 7.

NEBRASKA: Simeon, *Bates* 1114; North Platte, *Plank* 38; Central City, *Rydberg* 2011, *Shear* 264; Niobrara, *Clements* 2705; Hooker County, *Rydberg* 1538; Grant County, *Rydberg* 1788.

KANSAS: Bucklin, *Hitchcock* in 1892; Ulysses, *Thompson* 56; Syracuse, *Thompson* 134; Tribune, *Reed* in 1892; Osborne City, *Shear* 152.

TEXAS: Abilene, *Tracy* 8295; Paloduro, *Gardner* 24; without locality, *Nealley* in 1889.

MONTANA: Great Falls, *R. S. Williams* 843; Silesia, *Griffiths & Lange* 15; Upper Big Horn River, *Blankinship* 179; Missoula River, *Scribner* 328; Glendive, *Ward* in 1883; Billings, *Williams & Griffiths* 246; Manhattan, *Shear* 436.

WYOMING: No Wood Creek, *Williams* 2847; Sand Creek, *E. Nelson* 4984; Sybille Creek, *E. Nelson* 481; Badger, *A. Nelson* 8346; Cheyenne River, *Geyer* in 1839; Buffalo Fork, *Tweedy* 93, 95; Newcastle, *Griffiths* 684; Yellowstone National Park, *Chase* 5251, 5253, *Hitchcock* 2114, *Rydberg & Bessey* 3544.

IDAHO: St. Anthony, *Merrill & Wilcox* 152; *Merrill* 43; Shoshone, *Evermann* in 1893; Rathdrum, *Sandberg, Heller & MacDougal* 713; Caldwell, *Chase* 4746.

WASHINGTON: Kittitas County, *Sandberg & Leiberg* 431; Waitsburg, *Horner* 526; Streptoe, *Vasey* 3065; Prosser, *Cotton* 625, 891; Spokane, *Chase* 4986; Lake Chelan, *Elmer* 484, 848.

BRITISH COLUMBIA: Sicamous, *Macoun* 6 in 1889.

OREGON: Union, *Cusick* 3326g; Malheur County, *Griffiths & Morris* 676½; Ontario, *Griffiths & Morris* 935; Harney County, *Griffiths & Morris* 891, 900; Malheur Lake, *Griffiths & Morris* 738; Manns Lake, *Griffiths & Morris* 696; Beulah, *Griffiths & Morris* 864; Princeville, *Leiberg* 834; Milton, *Brown* 34; Upper Klamath Lake, *Leiberg* 714; Sauvies Island, *Howell* in 1882; Corvallis, *Hitchcock* in 1901; Roseburg, *Hitchcock* 2789, 2798.

COLORADO: Denver, *Eastwood* 17a, *Letterman* in 1884; Manitou, *Chase* 5292, 5307; Rocky Ford, *Griffiths* 3313; Fort Collins, *Agr. College* 3368, *Cowen* 549; Golden, *Rydberg* 2505, *Shear* 755; Canyon City, *Shear* 965; Piedra, *Baker* in 1899; Durango, *Tweedy* 386; Black Canyon, *Baker* 676; Steamboat Springs, *Eastwood* 14; Grand Junction, *Hitchcock* 2204; Montrose, *Hitchcock* 2205; above Manitou, *Hitchcock* 2374; Ouray, *Hitchcock* 2275; Trinidad, *Chase* 5345.

UTAH: Cottonwood Canyon, *Watson* 1349; Logan, *Rydberg* 2351; Gunnison, *Ward* 679; Elk Ranch, *Jones* 6035; Ephraim, *Tidestrom* 2482.

NEVADA: Leonard Creek, *Griffiths & Morris* 270; Big Creek, *Griffiths & Morris* 188; Ruby Valley, *Watson* 1349; Reno, *Tracy* 192; Virginia City, *Bloomer* 2265.

NEW MEXICO: Tierra Amarilla, *Wooton* 2948; Cliff, *Smith* in 1897; White Mountains, *Wooton* 303; Albuquerque, *Harward* 21a; Las Cruces, *Plank* 2; Mogollon Mountains, *Metcalfe* 434; Pecos, *Standley* 4948; Cimarron Canyon, *Griffiths* 5551; Organ Mountains, *Wooton* 1071; Deming, *Hitchcock* 3760; Las Vegas Hot Springs, *Grant* 5536; Mesilla Park, *Hitchcock* 3819; Dona Ana County, *Wooton & Standley* 3184.

ARIZONA: San Francisco Mountains, *Leiberg* 5783; Canyon de Chelly, *Griffiths* 5852; Big Valley Mountains, *Baker & Nutting* in 1894; San Bernardino Ranch, *Mearns* 743, 788.

CALIFORNIA: Castle Crag, *Hitchcock* 3069; Mt. Shasta, *Palmer* 2649 in 1892; Yreka, *Butler* 871; on the Sacramento, *Wilkes* Expl. Exp.; Tulare County, *Michener & Bioletti* 115, *Palmer* 2709 in 1892; Modoc County, *Baker & Nutting* in 1894; Riverside, *Hall* in 1901, *Reed* 1137; Colorado River, *Cooper* 2228; San Bernardino, *Parish* 1081.

25. **Panicum hirticaule** Presl.

Panicum hirticaulum[*e*] Presl, Rel. Haenk. **1**: 308. 1830. The locality as given by Presl is "*ad Acapulco, Mexico.*" The type, in the herbarium of the National Museum at Prague, is labeled "Mexico." It represents the medium form of the species, with nearly simple culms, narrowly ascending lower panicle branches and reddish brown spikelets, 3 mm. long.

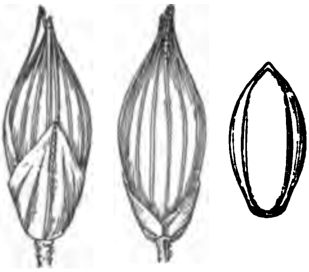


FIG. 46.—*P. hirticaule.* From type specimen.

Panicum flabellatum Fourn. Bull. Soc. Bot. France II. **27**: 293. 1880, not Steud. 1854. This is published in a list of plants collected in Nicaragua by Paul Lévy, "*Omotepe* (n. 1166)" being cited. The type, Lévy no. 1166 in the Paris Herbarium, was collected October, 1869, on "Prairies, Ile d'Omotepe."

Panicum polygamum hirticaulum[*e*] Fourn. Mex. Pl. **2**: 28. 1886. Based on "*P. hirticaulum* Presl," but the specimens here cited are referable to *P. maximum*.

This species was listed by Brandegee[a] as *Panicum capillare* var. *glabrum* Vasey, without description, having been so named by Vasey. The specimen in the National Herbarium consists of several small plants of *P. hirticaule*.

---

[a] Proc. Calif. Acad. II. **2**: 211. 1889.

DESCRIPTION.

Plants erect, simple or nearly so, or sometimes branching and decumbent at base, 15 to 70 cm. high; culms papillose-hispid to glabrous, nodes spreading-hispid; sheaths papillose-hispid, but sometimes sparsely so; blades 5 to 15 cm. long, 4 to 13 mm. wide, often cordate at base, sparsely hispid or nearly glabrous, ciliate toward the base; panicles exserted, 5 to 15 cm. long, scarcely one-third the entire height of the plant, rather many-flowered, the branches ascending, the lower usually narrowly so, scabrous but not pilose, bearing rather short and appressed-pediceled spikelets along half to two-thirds their length, the glabrous pulvini inconspicuous; spikelets 2.7 to 3.3 mm. long, 1 to 1.1 mm. wide (smaller in occasional specimens), lanceolate-fusiform, acuminate, typically reddish brown; first glume half to three-fourths the length of the spikelet, acuminate, the midnerve scabrous toward the apex; second glume slightly longer than the sterile lemma, both much exceeding the fruit, strongly many-nerved, the midnerves scabrous toward the summit, the palea of the sterile floret small, nerveless; fruit 2 mm. long, 1 mm. wide, elliptic, a scar sometimes showing on either side at base.

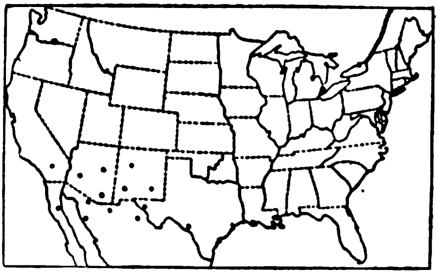


FIG. 47.—Distribution of *P. hirticaule*.

This species is variable; the Mexican specimens are mostly fairly typical, but the more northern ones are often rather freely branched or the panicles are less strict or the spikelets not reddish.

In the following Mexican and Central American specimens the spikelets, though reddish brown and borne on strict branches, are only 2.2 to 2.5 mm. long. MEXICO: Colima, *Palmer* 14, 143, and 145 in 1897; Alamos, *Palmer* 690 in 1890; Territorio de Tepic, *Rose* 3351. NICARAGUA: Without locality, *Flint* in 1868.

DISTRIBUTION.

Rocky or sandy soil, Texas to southern California and south through Mexico; also in the Galápagos Islands.

TEXAS: El Paso, *Jones* 4212; without locality, *Nealley* in 1887.

WASHINGTON: Bottomland near Bingen, *Suksdorf* 2330. This is probably introduced, as it is far out of its range.

NEW MEXICO: Organ Mountains, *Wooton* in 1907, *Standley* in 1906; Florida Mountains, *Mulford* 1012, 1078; Mangas, *Metcalfe* in 1897, *Smith* in 1898; Rio Gila, *Greene* 258; Hillsboro, *Metcalfe* 1442; San Luis Mountains, *Mearns* 2093.

ARIZONA: Tucson, *Griffiths* 1520, 3358, *Hitchcock* 3481, 3494, 3509, *Pringle* in 1881; Santa Rita Mountains, *Griffiths* 7005, 7194, *Griffiths & Thornber* 4, 28, 256; Salero Mountains, *Griffiths* 6123; Santa Catalina Mountains, *Griffiths* 7146; Huachuca Mountains, *Holzner* 1659; Fort Huachuca, *Wilcox* in 1894; Pearce, *Griffiths* 1938; Cochise, *Griffiths* 1918; Phoenix, *Griffiths* 7317; Patagonia, *Hitchcock* 3658, 3675; Benson, *Hitchcock* 3730; near monument 82, *Mearns* 1905; near Mexican boundary, *Mearns* 738, 767.

CALIFORNIA: Sierra Nevada Mountains, *Lemmon* in 1875; Jamacha, *Canby* 6 in 1894.

MEXICO: Near International Boundary, *Mearns* 2294, *Merton* 1705; northern Sonora, *Griffiths* 6758, 6799, 6892; Nogales, *Hitchcock* 3631; Llano, *Hitchcock* 3526; Hermosillo, *Hitchcock* 3541, 3573, 3604; Guaymas, *Hitchcock* 3547, 3553, *Palmer* 208 and 346 in 1887; Alamos, *Palmer* 695 and 750 in 1890; Purisima, Lower California, *Brandegee* 8 in 1889, 42 in 1899; State of Chihuahua, *Nelson* 6297, 6355, *Palmer* 1 b in 1885 in part; Topolobampo, *Palmer* 249 and 251 in 1897; Culiacán, *Palmer* 1544, 1545, and 1554 in part in 1891.

GALÁPAGOS ISLANDS: *Agassiz* in 1891.

26. **Panicum pampinosum** sp. nov.

DESCRIPTION.

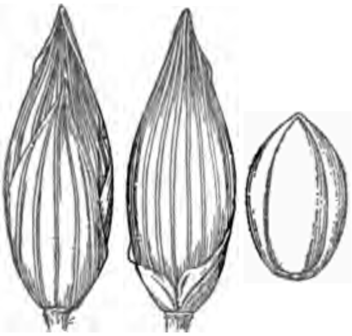


FIG. 48.—*P. pampinosum.* From type specimen.

Plants freely branching from the base; culms ascending from a decumbent base, branching at the lower and middle nodes, compressed, glabrous, or sparsely pilose below the panicle, the nodes pubescent; sheaths loose, papillose-hispid, ciliate; ligules of very stiff hairs 2 to 3 mm. long; blades 5 to 12 cm. long, 5 to 10 mm. wide, flat, scarcely narrowed at the rounded or subcordate base, sparsely pilose above, sparsely hispid beneath, the margin pilose and more or less undulate; panicles long-exserted, 6 to 15 cm. long, half to two-thirds as wide, the branches solitary, the lower as much as 5 to 8 cm. long, often bearing a branchlet at base, stiffly ascending, bearing several, mostly short, appressed branchlets with rather crowded, short-pediceled spikelets; spikelets about 4 mm. long, 1.4 mm. wide, very turgid, pointed; first glume more than three-fourths the length of the spikelet, pointed; second glume and sterile lemma subequal, exceeding the fruit and pointed beyond it, the sterile palea short; fruit 2.2 mm. long, 1.3 mm. wide, oval, an indistinct scar at the base.

Type U. S. National Herbarium no. 592754, collected August 25, 1903, on range reserve, altitude 2,600 feet, Wilmot, Arizona, by Prof. J. J. Thornber (no. 193).

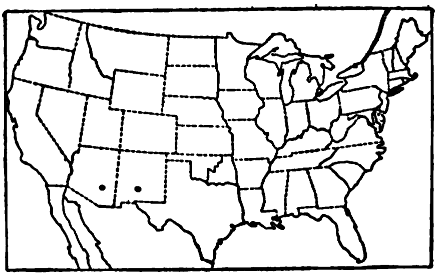


FIG. 49.—Distribution of *P. pampinosum.*

DISTRIBUTION.

On mesas, New Mexico and Arizona.

NEW MEXICO: Organ Mountains, *Wooton* 2014; Grant County, *Rusby* 444; without locality, *Wright* 2084.

ARIZONA: Tucson Mountains, *Griffiths* 6939½; Wilmot, *Thornber* 193 and September 3, 1903 (the latter in Univ. Ariz. Herb.).

26A. **Panicum decolorans** H. B. K.[a]

---

[a] While this revision was in press this species was collected by A. S. Hitchcock at its type locality, Querétaro, Mexico. It has therefore been removed from the list of doubtful species. The description and illustration will be found on page 328.

27. **Panicum stramineum** sp. nov.

DESCRIPTION.

Plants ascending or widely spreading, sparingly branching at the base and lower nodes, or simple, 20 to 50 cm. high; culms glabrous, the nodes appressed-villous; sheaths glabrous, sparsely papillose or papillose-hispid; blades erect or ascending, 10 to 30 cm. long, 4 to 15 mm. wide, rounded or somewhat cordate at base, glabrous, scabrous on the margin and sometimes on the upper surface, sometimes ciliate at base; panicles finally exserted, one-fourth to one-third the entire height of the plant, ovoid in outline, rather many-flowered, the pedicels scarcely as appressed as in *P. hirticaule;* spikelets 3.2 to 3.7 mm. long, 1.5 mm. wide, elliptic, abruptly acuminate, turgid, pale stramineous; first glume one-third the length of the spikelet, blunt or subacute, the nerves usually anastomosing; second glume and sterile lemma equal, or the glume slightly shorter, not much exceeding the fruit, the palea of the sterile floret as long as the fruit, 2-nerved; fruit 2.2 mm. long, 1.3 mm. wide, obovate-elliptic, turgid, a rather prominent scar on either side at base.

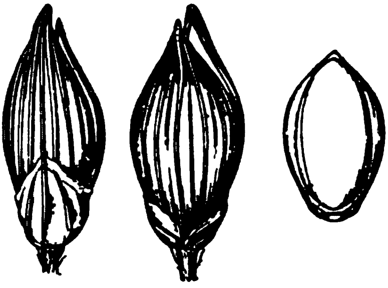


FIG. 50.—*P. stramineum.* From type specimen.

Type U. S. National Herbarium no. 592753, collected 1887, Guaymas, Sonora, Mexico, by Dr. Edward Palmer (no. 206).

This species differs from *P. hirticaule* in being nearly glabrous throughout, in the longer blades, more turgid, less long-pointed spikelets with shorter, scarcely acute first glume.

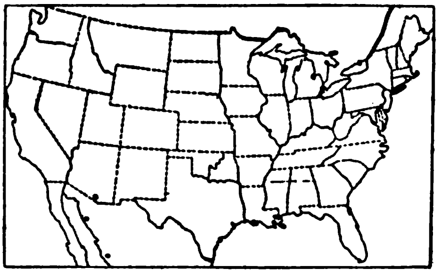


FIG. 51.—Distribution of *P. stramineum.*

DISTRIBUTION.

Rich bottom lands and damp soil, southern Arizona and northwestern Mexico.

ARIZONA: Near the Mexican boundary, *Pringle* in 1884; Tucson, *Thornber* in 1901, and 219 (the latter in N. M. Agr. Col. Herb.).

MEXICO: Guaymas, *Palmer* 168a and 206 in 1887; Culiacán, *Palmer* 1538 in 1891; State of Sinaloa, *Rose* 1878, 1883; Acaponeta, *Rose* 1889, 3281.

28. **Panicum sonorum** Beal.

Panicum capillare miliaceum Vasey, Contr. Nat. Herb. 1: 28 1890, not *P. miliaceum* L. 1753. Collected at Lerdo, Mexico, at the head of the Gulf of California, in 1889, *Palmer* 947. This is not based on *P. miliaceum* L. The type is in the National Herbarium.

Panicum sonorum Beal, Grasses N. Amer. **2**: 130. 1896. Based on *P. capillare miliaceum* Vasey.

DESCRIPTION.

Plants robust, erect or spreading, 60 cm. to over 1 meter high; culms glabrous or sparsely papillose-hispid, the nodes pubescent; sheaths papillose-hispid or nearly glabrous; blades 15 to 40 cm. long, 15 to 30 mm. wide, cordate-clasping at base, rather prominently nerved, glabrous or sparsely papillose-hispid; panicles large and more or less drooping, 20 to 30 cm. long, densely flowered, the numerous branches narrowly ascending; spikelets 3 to 3.3 mm. long, 1.1 mm. wide, lanceolate, strongly nerved, brownish; first glume half to two-thirds the length of the spikelet, acuminate; second glume slightly exceeding the sterile lemma, the palea of the sterile floret wanting; fruit 2.1 mm. long, 1 mm. wide, oblong-obovate, subacute.

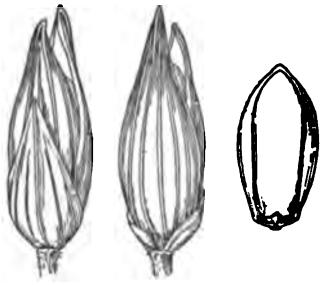


FIG. 52.—*P. sonorum*. From type specimen.

This species may be a cultivated form of *P. hirticaule*. It is large in all its vegetative parts. Palmer states that it is used as food by the Cocopa Indians, the seed being sown in spring on wet ground. A specimen from the State of Chiapas in southern Mexico, *Nelson* 2959, is intermediate between this and *P. hirticaule* but is more robust than the latter species, the blades being 15 cm. long and 18 mm. wide.

DISTRIBUTION.

Rich bottom land, northwestern Mexico.

MEXICO: Lerdo, *Palmer* 947 in 1889; southwestern Chihuahua, *Palmer* 1 c in 1885; Culiacán, *Palmer* 1539 and 1554 in part in 1891.

29. Panicum parcum sp. nov.

DESCRIPTION.

Plants sparingly branching from the middle or upper nodes; culms 30 to 50 cm. high, slender, erect or somewhat geniculate at base, glabrous; sheaths rather sparingly papillose-hispid, glabrate toward the base; ligules 1 to 2 mm. long; blades ascending, rather thin, linear, elongated, 10 to 30 cm. long, 2 to 6 mm. wide, slightly narrowed to the base, acuminate, sparsely pilose on both surfaces or glabrate, more or less ciliate; panicles short-exserted, the terminal 10 to 20 cm. long, half to two-thirds as wide (the axillary smaller), few-flowered, the few, slender, but not capillary, flexuous branches solitary, remote, ascending, bearing ascending or appressed branchlets with scattered, rather long-pediceled spikelets; spikelets about 6 mm. long, 1.8 mm. wide, turgid, acuminate-pointed; first glume about half the length of the spikelet, pointed; second glume longer than the sterile lemma, both exceeding the fruit and pointed beyond it, the sterile palea about half as long as its lemma; fruit 3.3 mm. long, 1.4 mm. wide.

Type U. S. National Herbarium no. 471378, collected October 9 to 15, 1891, on "mountain side, not very common," Lodiego, on the Culiacán River, Sinaloa, Mexico, by Edward Palmer (no. 1657).

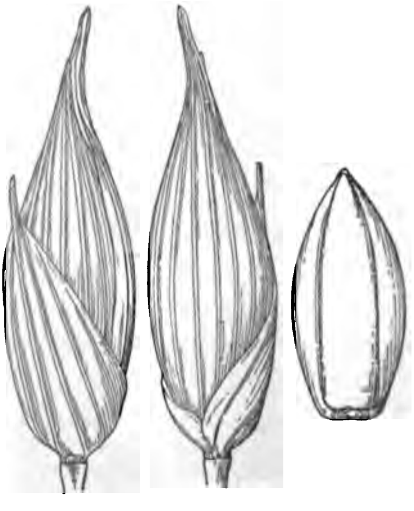


FIG. 53.—*P. parcum*. From type specimen.

The only other specimen examined is also from the vicinity of Culiacán, Sinaloa; Copradia, *Brandegee* 4 in 1904.

30. Panicum miliaceum L.

Panicum miliaceum L. Sp. Pl. 58. 1753. "Habitat in India" is the only citation given. We have not seen the type, which may not be in existence.

Milium panicum Mill. Gard. Dict. no. 1. 1759. Based on *Panicum miliaceum* L.

Milium esculentum Moench, Meth. Pl. 203. 1794. Based on *Panicum miliaceum* L.

Panicum milium Pers. Syn. Pl. 1:83. 1805. Based on *P. miliaceum* L. the original description of which is copied but very slightly augmented.

Panicum asperrimum Fisch.; Jacq. Eclog. Gram. 46. *pl. 31.* 1815–1820. The description is based on a specimen grown in the garden of the University at Vienna from seed received from Count Razoumovsky of Gorenki [near Moscow]. This name was earlier listed by Fischer[a] without description. We have not seen the type, but Jacquin's description and plate identify the species.

DESCRIPTION.

Plants erect or decumbent at base, usually branching from the basal nodes, 20 cm. to as much as 1 meter high; culms stout, hispid below the pubescent nodes or glabrous; sheaths loose, sometimes longer than the internodes, papillose-hispid; blades drying yellowish green, more or less pilose on both surfaces, or glabrate, as much as 30 cm. long and 2 cm. wide, rounded at base, gradually narrowed to the apex; panicles usually more or less included at base, 10 to 30 cm. long, more or less nodding, usually rather compact, the numerous branches narrowly ascending, very scabrous, spikelet-bearing toward the summit; spikelets 4.5 to 5 mm. long, ovate, acuminate, strongly many-nerved; first glume half the length of the spikelet or more, acuminate; second glume and sterile lemma subequal, a small palea in the sterile floret; fruit 3 mm. long, 2 mm. wide, elliptic, stramineous to reddish brown.

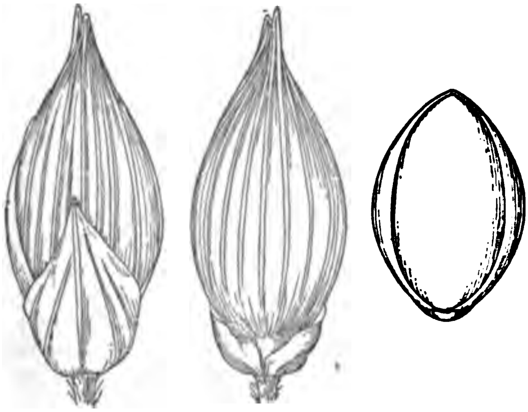


FIG. 54.—*P. miliaceum.* From Griffith's no. 6490, East Himalaya.

DISTRIBUTION.

Waste places, introduced from the Old World. Cultivated under the name of broomcorn millet or hog millet. Scattered specimens, introduced or escaped from cultivation, are found in all the cooler parts of the United States, especially eastward. Cultivated specimens may be larger than indicated in the above description, while in dry soil depauperate specimens occur.

MAINE: Orono, *Harvey* in 1897.

VERMONT: Burlington, *Brainerd* in 1895 (Gray Herb.).

MASSACHUSETTS: Essex County, *Conant* in 1880.

---

[a] Cat. Hort. Gorenk. ed. 2. 3. 1812.

CONNECTICUT: Bridgeport, *Eames* in 1895.
NEW YORK: Ontario Beach, *Britton* in 1892.
NEW JERSEY: Califon, *Fisher* in 1899; Landisville, *Gross* in 1883.
PENNSYLVANIA: Luzerne County, *Small & Heller* in 1890.
OHIO: Cleveland, *Claasen* in 1891 (Gray Herb.).
INDIANA: Miller, *Umbach* 2363.
ILLINOIS: Chicago, *Chase* 1633 (Hitchcock Herb.).
MICHIGAN: Without locality, *Farwell* 1414.
DELAWARE: Wilmington, *Commons* 57.
DISTRICT OF COLUMBIA: *Steele* in 1899.
FLORIDA: Pensacola, *Curtiss* 6867.
NEW MEXICO: Lincoln County, *Wooton & Standley* 3528.
CALIFORNIA: Kenwood, *Smith* in 1898; Sacramento, *Williams* in 1906.

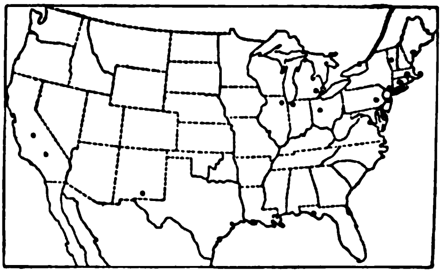


FIG. 55.—Distribution of *P. miliaceum.*

31. Panicum cayennense Lam.

Panicum cayennense Lam. Tabl. Encycl. **1**: 173. 1791. "Cayenna. *D. Stoupy*." The type, in the Lamarck Herbarium, is labeled "Panicum cayennense Lam. ill. gen. aff. Panico capillare." Lamarck states in the original description that this species is near *P. capillare*. In the general herbarium at Paris is a specimen of *P. rudgei* from Cayenne collected by Le Blond, which is labeled in Lamarck's hand "Panicum cayennense lam. illustr. et dict." This specimen does not correspond to Lamarck's descriptions, especially the later one,[a] so well as does the preceding specimen, which is therefore taken as the type.

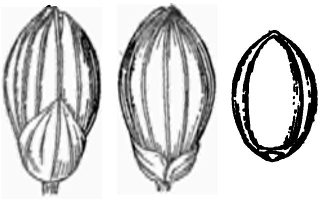


FIG. 56.—*P. cayennense*. From type specimen.

Panicum floribundum Rich.; Lam. Encycl. **4**: 742. 1798. This is given as a synonym under *P. cayennense*, and credited to "Rich. herb." The type, in the Richard Herbarium, is from Cayenne. This specimen agrees with the first of those mentioned above.

Panicum pedunculare Willd.; Steud. Syn. Pl. Glum. **1**: 77. 1854. "Brasil." This is credited to "*Willd.* hrbr." The name occurs earlier[b] as a nomen nudum. The type, in the Willdenow Herbarium, was collected by Humboldt in "Amer. meridion."

Panicum cayennense patulum Doell in Mart. Fl. Bras. **2**^{2}: 220. 1877. Based on *P. cayennense* Lam.

DESCRIPTION.

Plants, erect, or, when much-branched at the base, spreading; culms 20 to 50 cm. high, often zigzag, glabrous or more or less papillose-pilose below the pilose nodes; sheaths papillose-pilose, ciliate; blades linear, 10 to 20 cm. long, 4 to 10 mm. wide, rather stiffly ascending, rounded at the scarcely narrowed base, rather sparsely papillose-pilose on both surfaces or sometimes nearly glabrous; panicles terminal and axillary from the upper 2 or 3 sheaths, rarely fascicled, approximate and forming an elongated inflorescence from two-thirds to almost the entire height of the plant, the individual panicles included at the base, 8 to 20 cm. long, half to two-thirds as wide, the slender, scabrous branches and branchlets and the long, flexuous pedicels divaricate; spikelets 2.2 to 2.3 mm. long, 1.2 mm. wide, obovoid, turgid; first glume about half the length of the spikelet, acute; second glume and sterile lemma equal, slightly exceeding the fruit, abruptly short-pointed, strongly 5 to 7-nerved, the sterile palea about half the length of its lemma; fruit 1.7 mm. long, 1.1 mm. wide, oval, turgid.

---

[a] Lam. Encycl. **4**: 742. 1798.

[b] Steud. Nom. ed. 2. **2**: 261. 1841.

In its elongated inflorescence composed of several approximate panicles this species resembles *P. rudgei* Roem. & Schult., with which it has commonly been confused.

DISTRIBUTION.

Pine woods, Costa Rica, Cuba, and South America.

COSTA RICA: Buenos Aires, *Tonduz* 3685.

CUBA: Pinar del Rio, *Wright* 3865; Herradura, *Tracy* 9073; Isle of Pines, *Curtiss* 267, *Palmer & Riley* 1086, *Taylor* 34.

FRENCH GUIANA: Cayenne (Paris Herb.).

BRAZIL: *Burchell* 8350.

Diffusa.—Perennials; culms stiff, somewhat tufted, sheaths mostly hirsute, ligules membranaceous, ciliate, 1 to 3 mm. long; blades long and narrow; spikelets mostly narrowly ovate, acuminate, glabrous; first glume clasping, the equal second glume and sterile lemma exceeding the fruit and pointed beyond it, the palea of the sterile floret about half as long as its lemma; fruit smooth and shining. The species of this group often resemble those of Capillaria, especially in their spikelets, but the latter are all annual.

- Second glume and sterile lemma elongated, at least three times as long as the fruit.............................. 32. *P. capillarioides.*
- Second glume and sterile lemma not elongated.
  - Panicles narrow, compact; blades 2 cm. or more wide... 38. *P. hirsutum.*
  - Panicles diffuse, at least at maturity; blades not over 1 cm. wide.
    - Blades 1 to 3 mm. wide, plants spreading or ascending 33. *P. diffusum.*
    - Blades mostly over 5 mm. wide, plants erect.
      - Spikelets 4 to 4.2 mm. long, the midnerves of glumes and sterile lemma scabrous toward the apex.................................. 36. *P. lepidulum.*
      - Spikelets usually less than 3.5 mm. long.
        - Blades hirsute on both surfaces (sometimes glabrescent), not at all glaucous...... 37. *P. ghiesbreghtii.*
        - Blades glabrous on both surfaces or with a few hairs on either surface, glaucous above.
          - Panicles much exceeding the leaves; spikelets 3 to 3.5 mm. (rarely 3.7 mm.) long......................... 35. *P. hallii.*
          - Panicles usually equaled or exceeded by the uppermost blades; spikelets 2 to 2.6 mm. long................. 34. *P. filipes.*

32. **Panicum capillarioides** Vasey.

Panicum capillarioides Vasey in Coulter, Contr. Nat. Herb. 1: 54. 1890. "Point Isabel," collected by "G. C. Nealley, in the region of the Rio Grande, in Texas." The type specimen, in the National Herbarium, bears the name in Vasey's writing and the serial number 634 as in the list in which the species is published.

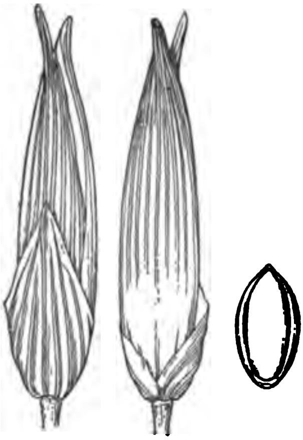


FIG. 57.—*P. capillarioides.* From type specimen.

DESCRIPTION.

Plants in tufts of few to several culms from a knotted crown, erect or ascending, 30 to 55 cm. high; culms stiff, simple or sparingly branching, appressed-pubescent or sometimes glabrate, the nodes densely ascending-pubescent; sheaths mostly equaling or exceeding the rather short internodes, papillose-pubescent; ligules about 1.5 mm. long; blades rather stiff, ascending, 10 to 30 cm. long, 2 to 10 mm. wide, scarcely narrowed to the rounded base, flat or drying somewhat involute, harshly papillose-pubescent on both surfaces, usually sparsely so beneath; panicles short-exserted, usually nearly equaled by the upper blades, diffuse, few-flowered, 10 to 20 cm. long, as wide or wider, the capillary branches stiffly spreading at maturity, bearing rather short-pediceled spikelets toward the ends, the axis and branches scabrous, the rather conspicuous pulvini pubescent; spikelets 5 to 6 mm. long, 1 to 1.2 mm. wide, lanceolate, long-acuminate; first glume one-third to half the length of the spikelet, acute, 7-nerved; second glume and sterile lemma, subequal, many-nerved, at least three times as long as the fruit, usually more or less inflated above it; fruit 1.6 to 1.8 mm. long, 0.8 to 0.9 mm. wide, elliptic.

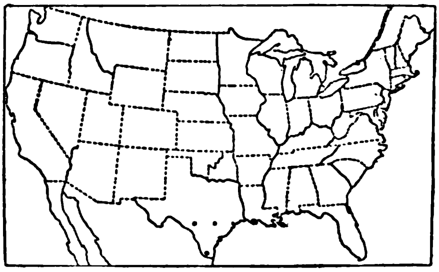


FIG. 58.—Distribution of *P. capillarioides.*

This species is readily distinguished from all others by the elongated second glume and sterile lemma, greatly exceeding the small fruit.

DISTRIBUTION.

Prairie, southern Texas and northern Mexico.

TEXAS: San Diego, *Croft* 240, *Nealley* 69 in 1892; Pena, *Nealley* 30 in 1891; Kingsville, *Piper* in 1906; Corpus Christi to Brownsville, *Hitchcock* 218; without locality or date, *Buckley* (Hitchcock Herb.).

MEXICO: Monterey, *Hitchcock* 5547.

33. **Panicum diffusum** Swartz.

Panicum diffusum Swartz, Prodr. Veg. Ind. Occ. 23. 1788. "*Jamaica, Hispaniola.*" The type,[a] in the Swartz Herbarium, is labeled "diffusum fl. ind. occ."

Panicum caespititium Lam. Tabl. Encycl. 1: 173. 1791. "Ex Amer. merid. *communic. D. Richard.*" The type specimen, in the Lamarck Herbarium, is marked "Ex D. Richard."

---

[a] See footnote [c], page 36.

DESCRIPTION.

Plants in small, dense tufts, spreading, or ascending from a decumbent base, simple or sparingly branching, rarely repeatedly branching, 25 to 50 cm. high; culms slender, wiry, glabrous, the nodes appressed-pubescent; sheaths shorter than the internodes, striate, glabrous, or pubescent along the margin toward the summit or the lower sparsely so throughout; ligules about 1 mm. long; blades erect from the sheath but often spreading at the ends, 5 to 20 cm. long, 1 to 3 mm. wide, flat or drying subinvolute, sparsely pilose on the upper surface, glabrous or sparingly pubescent beneath; panicles exserted, 5 to 10 cm. long, nearly as wide, the few capillary branches at first ascending, stiffly spreading at maturity, bearing a few short-pediceled spikelets toward the ends; spikelets 2.1 to 2.5 mm. long, about 1 mm. wide; first glume about half the length of the spikelet, acute, 5-nerved; second glume and sterile lemma 7 to 9-nerved; fruit 1.5 to 1.6 mm. long, 0.9 mm. wide, elliptic.

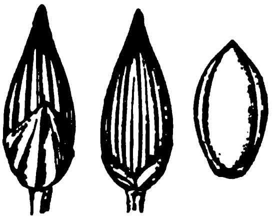


FIG. 59.—*P. diffusum*. From type specimen.

A collection from Santo Domingo, *Wright, Parry & Brummel* 627, is doubtfully referred here. It consists of tall plants, 60 to 70 cm. high, with spikelets 2.8 to 3 mm. long. The blades are narrow as in *P. diffusum*, but hirsute on both surfaces as in *P. ghiesbreghtii*.

DISTRIBUTION.

Savannas and borders of open woods, West Indies.

BAHAMAS: New Providence, *Britton & Brace* 424.

CUBA: Habana, *León* 190, 305 in part, 923, 923b; Santiago de las Vegas, *Baker & Wilson* 511, *Tracy* 9111, *Van Hermann* 1444, *Wilson* 1405; Triscornia, *Tracy* 9082; Guanajay, *Palmer & Riley* 802; Prov. of Santa Clara, *León* 923c; without locality, *Wright* 3852, 3860 in part, 3877; Isle of Pines, Nueva Gerona, *Curtiss* 384, 494.

DANISH WEST INDIES: St. Thomas, *Eggers* in 1882.

WINDWARD ISLANDS: Martinique, *Duss* 536.

34. Panicum filipes Scribn.

Panicum filipes Scribn. in Heller, Contr. Herb. Frankl. Marsh. Coll. 1: 13, 1895. "Growing in rich shaded ground in the upper part of the 'Arroyo,' at Corpus Christi," Texas. The type, in Hitchcock's herbarium, was collected May 31, 1894, by A. A. Heller, no. 1809. The panicle is rather more lax and has longer, more delicate branchlets than usual in the species, and spikelets 2.5 to 2.6 mm. long.

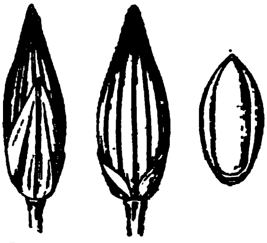


FIG. 60.—*P. filipes*. From type specimen.

DESCRIPTION.

Plants pale green, in small dense tufts, erect or ascending, 30 to 80 cm. high; culms simple or sparingly branching, stiff, glabrous except the appressed-pubescent nodes; sheaths shorter than the internodes, glabrous or sparsely appressed-hispid toward the summit; ligules about 1.5 mm. long; blades thin, ascending or laxly spreading, 10 to 25 cm. long, 3 to 8 mm. wide, flat, glaucous and glabrous on the upper surface, glabrous beneath or very sparsely papillose-hirsute; panicles exserted, usually equaled or exceeded by the uppermost blades, 7 to 25 cm. long, about as wide, the distant branches spreading, the branchlets rather more numerous and the spikelets usually longer-pediceled than in *P. diffusum*; spikelets 2 to 2.6 mm.

long, about 1 mm. wide; first glume about two-thirds the length of the spikelet, acuminate, 3 to 5-nerved, second glume and sterile lemma 5 to 7-nerved; fruit 1.5 to 1.7 mm. long, about 0.8 mm. wide, elliptic.

This species has been confused with both *P. diffusum* and *P. hallii*, to both of which it is closely related. From the first it is distinguished by the taller, erect or nearly erect culms, and wider blades glabrous and glaucous on the upper surface. The typical form has a much more loosely-flowered panicle than has *P. diffusum*, but most of the specimens are less well marked. From *P. hallii* it is distinguished by the looser panicles of usually longer pediceled, smaller spikelets, by the usually taller culms and longer blades, often equaling or exceeding the panicle.

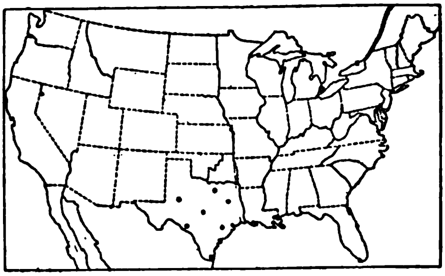


FIG. 61.—Distribution of *P. filipes*.

The following specimens have spikelets 2.8 to 3 mm. long and appear to be intermediate between *P. filipes* and *P. hallii*. TEXAS: Abilene, *Bentley* in 1899; Daffan, *Bodin* 310; Dallas, *Bush* 1156; Spofford, *Griffiths* 6323; Olmito, *Tracy* 8908; Corpus Christi, *Heller* 1490. MEXICO: Guerrero, Lagunillas, *Langlassé* 263.

A specimen from "Overflow land along Colorado River," southern California, *Schellenger* 3, is doubtfully referred here. It appears to be an annual but is probably *P. filipes* fruiting the first year from seed.

DISTRIBUTION.

Low open ground or among chaparral, southern Texas.

TEXAS: Arlington, *Reverchon* 3526; Terrell, *Warburton* in 1904; Burnet, *Plank* 38; Llano, *Plank* 2; Kingsville, *Piper* in 1906; Houston, *Nealley* in 1886; Hempstead, *Thurow* in 1906; Kerrville, *Heller* 1883 in part; Seguin, *Plank* 97; Abilene, *Bentley* in 1899; Del Rio, *Plank* 85; San Diego, *Nealley* in 1894; Encinal, *Griffiths* 6387; Corpus Christi, *Nealley* 28 in 1891, in 1893 and 1894; Santa Maria, *Nealley* in 1889; Brownsville, *Hitchcock* 220, without locality, *Buckley* in 1881 and 1883, *Drummond* 286, 384, 394, *Nealley* in 1888.

35. Panicum hallii Vasey.

Panicum hallii Vasey, Bull. Torrey Club **11**: 64. 1884. "This is number 816 of E. Hall's Texas collection, distributed as *P. giganteum*, Scheele." The type, in the National Herbarium, was collected on "Dry hills, Austin, Eastern Texas, May 18, 1872, by Elihu Hall." Two species were distributed by Hall under 816, the other being *P. filipes*.

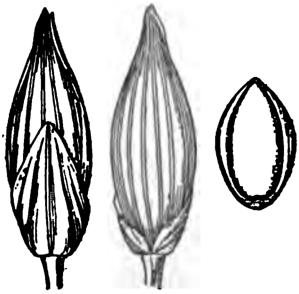


FIG. 62.—*P. hallii*. From type specimen.

DESCRIPTION.

Plants rather glaucous green, in small tufts, erect, 15 to 60 cm. high; culms simple or sparingly branching from the lower nodes, glabrous except the appressed-pubescent nodes; leaves commonly more or less crowded toward the base, the blades becoming curled or twisted, the lower sheaths overlapping on the short internodes; sheaths sparsely papillose-hispid to glabrous; ligules about 1.5 mm. long; blades erect or nearly so, 4 to 15 cm. long, 2 to 6 mm. wide, flat, usually sparsely papillose-ciliate toward the base, otherwise glabrous or with a few long, delicate hairs on the upper surface or sparingly papillose-hispid beneath, often with a thin, cartilaginous, white margin; panicles usually long-exserted and much exceeding the leaves, 6 to 20 cm. long, rather narrowly flabellate in outline, the few branches stiffly ascending, bearing short, appressed branchlets with approximate spikelets on short, appressed pedicels; spikelets 3 to 3.7 mm. long, 1.1 to 1.5 mm. wide, turgid; first glume half to two-thirds the length of the spikelet, acuminate, 3 to 5-nerved; second glume and sterile lemma strongly 5 to 7-nerved; fruit 1.7 to 2 mm. long, 1 to 1.3 mm. wide, oval, obtuse, dark olive brown at maturity.

The following specimens have looser panicles than typical and spikelets only 2.8 to 3.2 mm. long, the two Plank specimens having also laxer blades. These appear to be intermediate between *P. filipes* and *P. hallii* but rather nearer the latter. Texas: Abilene, *Tracy* 7941, Del Rio, *Plank* 44, 57.

Leiberg's no. 5916, collected on cinder cones, is a depauperate form, scarcely 10 cm. high.

DISTRIBUTION.

Dry prairie, rocky and gravelly hills and canyons and in bottomlands, and irrigated fields, Texas to Arizona and south to central Mexico.

Texas: Texline, *Griffiths* 5600; Baird, *Letterman* in 1882; Austin, *Hall* 816, *Stiles* in 1884; Abilene, *Bentley* in 1899, *Tracy* 7950; Colorado, *Tracy* 7945; Big Springs, *Tracy* 7953; Kimble County, *Reverchon* 1682; Kerrville, *Smith* in 1897; San Antonio, *Hitchcock* 219, *Plank* 46, 53; Corpus Christi, *Hitchcock* 221; Olmito, *Tracy* 9338; Spofford, *Griffiths* 6288; Del Rio, *Plank* 72 in part; Midland, *Tracy* 7952, 7954; Guadalupe Mountains, *Bailey* 719; Fort Davis, *Nealley* in 1893, Marfa, *Havard* 23; Sierra Blanca, *Nealley* in 1893; El Paso, *Vasey* in 1881; without locality, *Nealley* in 1887.

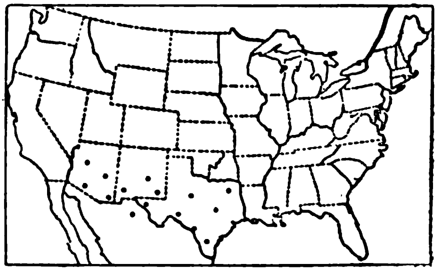


Fig. 63.—Distribution of *P. hallii*.

New Mexico: Cimarron Canyon, *Griffiths* 5504; Roswell, *Earle* 302; Carlsbad, *Tracy* 8200; Organ Mountains, *Hitchcock* 3783; Las Cruces, *Griffiths* 7408; Dona Ana County, *Wooton & Standley* 3983; Deming, *Hitchcock* 3762; Grant County, *Metcalfe* 807, *Smith* in 1896 and 1897.

Arizona: San Francisco Peaks, *Leiberg* 5916; Ash Fork, *Griffiths* 7357; Prescott, *Toumey* in 1894; Clifton, *Davidson* 31a, 414a; Mescal, *Griffiths* 1813; Santa Rita Mountains, *Griffiths* 3388, *Griffiths & Thornber* 238, 309; Patagonia, *Hitchcock* 3706; Paradise, *Blumer* 1683; Huachuca Mountains, *Holzner* Internat. Bound. Comm. 1566; without locality, *Lemmon* in 1883.

Mexico: Tamaulipas, *Palmer* 554 in 1907; Coahuila, *Palmer* 1338 in 1880; Chihuahua, *Pringle* 376.

36. Panicum lepidulum sp. nov.

DESCRIPTION.

Plants solitary or in small tufts, erect, 25 to 70 cm. high; culms usually producing one or two erect branches from the lower nodes, sparsely papillose-pilose to merely scabrous toward the summit; sheaths longer than the short lower internodes, shorter than the middle and upper ones, papillose-hispid, the hairs ascending; ligules about 2 mm. long; blades erect, or spreading at the apex, 7 to 30 cm. long, 5 to 10 mm. wide, scarcely narrowed to the more or less infolding base, flat or folded, sparsely papillose-pilose to nearly glabrous on both surfaces, glaucous on the upper surface; terminal panicles rather long-exserted, those of the branches short-exserted or slightly included at base, 7 to 20 cm. long, usually scarcely half as wide, the flexuous branches ascending, bearing short, rather spreading branchlets with 1 to 3 spikelets toward their ends, the whole forming a more evenly flowered panicle than in *P. hallii;* spikelets 4 to 4.2 mm. long, about 1.5 mm. wide, narrowly ovate, turgid, acuminate; first glume about half the length of the spikelet, acuminate, 5-nerved, the midnerve scabrous toward the apex; second glume and sterile lemma strongly 7 to 9-nerved, the midnerves scabrous toward the apex; fruit 2.3 to 2.5 mm. long, 1.3 to 1.5 mm. wide, oval, turgid, obtuse.

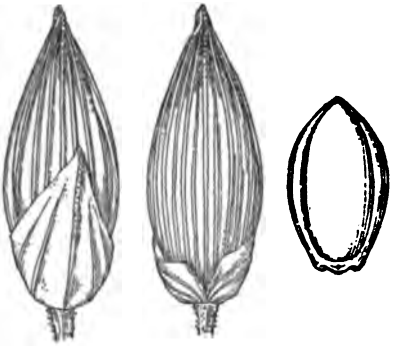


FIG. 64.—*P. lepidulum.* From type specimen.

Type U. S. National Herbarium no. 155163, collected September 22, 1885, by streams, rocky hills near Chihuahua, State of Chihuahua, Mexico, by C. G. Pringle (no. 497), and distributed as *P. diffusum* Swartz.

This species is distinguished from *P. hallii* by the more evenly flowered, narrower panicle of larger spikelets, and by the greater amount of pubescence. The plants average taller than *P. hallii*, though *Palmer* 533 is a depauperate specimen only 15 cm. high.

A specimen from Santa Catalina Mountains, Arizona, *Griffiths* 7063, with spikelets only 3.8 mm. long, is doubtfully referred here.

DISTRIBUTION.

Moist places in the mountains, Chihuahua to the City of Mexico.

MEXICO: Chihuahua, *Pringle* 497; Durango, *Palmer* 525 in 1896, 533 in 1906; City of Mexico, *Hitchcock* 5958.

37. Panicum ghiesbreghtii Fourn.

Panicum ghiesbreghtii Fourn. Mex. Pl. **2**: 29. 1886. This name was earlier listed by Hemsley[a] without description. Fournier cites three specimens, the first being "Absque loco (GHIESBREGHT)," which, since the species is named for this collector, is taken as the type. This is in the Paris Herbarium. It was collected in Mexico in 1845. A specimen collected by Ghiesbreght in Mexico and labeled *P. ghiesbreghtii* in the herbarium of the Botanical Garden in St. Petersburg, is *P. filipes.*

Panicum hirtivaginum Hitchc. Contr. Nat. Herb. **12**: 223. 1909. "Type specimen *Wright* 758, Cuba, U. S. National Herbarium no. 559958." The label on this specimen gives no locality in Cuba.

DESCRIPTION.

Plants in small tufts, rather robust; culms erect, papillose, ascending-hirsute, 60 to 80 cm. high, the nodes densely hirsute; sheaths mostly longer than the internodes, hirsute like the culms; ligules about 2 mm. long; blades erect or ascending, as much as 60 cm. long and 12 mm. wide, flat, not narrowed to the rounded base, papillose-hirsute on both surfaces or glabrescent; panicle short-exserted, nearly equaled by the

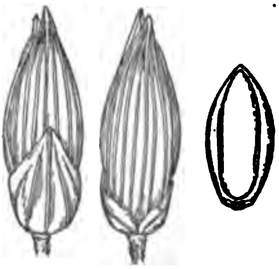


FIG. 65.—*P. ghiesbreghtii.* From type specimen.

---

[a] Biol. Centr. Amer. Bot. **3**: 489. 1885.

upper blades, 20 to 30 cm. long, usually less than half as wide, the branches ascending, naked at the base, the branchlets more or less appressed, bearing short-pediceled, approximate, but not crowded spikelets 3 mm. long, 1 mm. wide; first glume half to two-thirds the length of the spikelet, acute, 3 to 5-nerved; second glume and sterile lemma strongly 7 to 9-nerved; fruit 1.9 to 2 mm. long, 0.9 mm. wide, elliptic.

This species differs from *P. diffusum* in its robust habit, wider, flat blades, hirsute on both surfaces, and in its larger spikelets.

DISTRIBUTION.

Low moist ground, Mexico, Central America, and the West Indies; also in Ecuador.

Mexico: Borrego près Orizaba, *Bourgeau* 2751; Yucatan, Izamal, *Gaumer* 2477.

Costa Rica: Salinas Bay, *Pittier & Durand* 2633.

Cuba: Santiago de las Vegas, *Tracy* 9116; Herradura, *Tracy* 9068; La Soledad, *Eggers* 5406; Calvario, *León* 922; Guayabal, *León* 922b; without locality, *Wright* 758.

Porto Rico: Tabucoa, *Sintenis* 4983.

Leeward Islands: Guadeloupe, *Duss* 3184 and a specimen without number or date.

Ecuador: Manabi, *Eggers* 15419.

38. **Panicum hirsutum** Swartz.

Panicum hirsutum Swartz, Fl. Ind. Occ. **1**: 173. 1797. "Habitat in *Jamaicae* et *Hispaniolae* graminosis." The type, in the Swartz Herbarium, is from "Jamaica, Swartz."

DESCRIPTION.

Plants robust, culms as much as 1 cm. thick and 1.5 meters or more high, simple or sparingly branching, glabrous or with a few scattered hairs, the nodes appressed-pubescent; sheaths mostly overlapping, appressed papillose hirsute, the hairs sometimes dense at the summit; ligules dense, about 3 mm. long; blades flat, 20 to 50 cm. long, 20 to 35 mm. wide, scarcely narrowed to the rounded base, glabrous or with a few hairs toward the base, the margin serrulate; panicles short-exserted or included at base, 20 to 35 cm. long, 3 to 12 mm. wide, compact, densely flowered, the long lower branches erect, naked at base; spikelets 2 to 2.2 mm. long, about 0.9 mm. wide, rather turgid, abruptly pointed; first glume scarcely half the length of the spikelet, acute, 3 to 5-nerved; second glume and sterile lemma 5 to 7-nerved; fruit 1.5 mm. long, 0.7 mm. wide, elliptic.

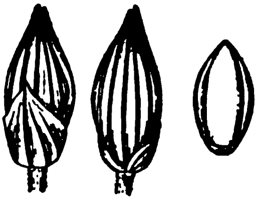


Fig. 66.—*P. hirsutum*. From type specimen.

This species is much more robust than any other in this group, to which, because of its compact panicle, it is not very closely allied.

DISTRIBUTION.

Gravelly river banks and wet places, Mexico, Central America, and the West Indies.

Leeward Islands: Guadeloupe, *Duss* 3917.

Mexico: Oaxaca, *Pringle* 5573.

Costa Rica: Confluence of Puerto Viejo and Sarapiquí, *Biolley* 7467; Port Limon, *Pittier* in 1904.

Trinidad: *Botanic Gardens Herb*. 2295, *Broadway* 2629.

PANICUM BERGII Arechav.[a] a South American species with numerous leaves clustered at the base, hispid sheaths, involute blades, and very diffuse panicles, a third or more the entire height of the plant, with verticillate lower branches, conspicuously pilose in the axils, and short-pointed spikelets 2.2 to 2.6 mm. long, was collected on ballast at Mobile, Alabama, in July and August, 1891, by Mohr and at Galveston, Texas, in 1903, by Hitchcock (the latter in Hitchcock Herb.).

Maxima.—Perennials; culms mostly robust and more than 1 meter high, simple or branching at the base only, or with small sterile shoots from the lower nodes; ligules membranaceous, ciliate; blades linear, flat; panicles large, many-flowered; spikelets ellipsoid, glabrous, mostly faintly nerved, the sterile floret with a well-developed palea and in *P. maximum* a staminate flower; fruit strongly to very obscurely transversely rugose, puberulent at the apex.

Culms with a corm-like base.
  Blades mostly over 5 mm. wide; culms more than 1 meter high .... 41. *P. bulbosum.*
  Blades less than 5 mm. wide; culms rarely as much as 1 meter high .... 41a. *P. bulbosum sciaphilum.*
Culms from a creeping rootstock, not corm-like at base.
  Nodes hirsute; ligules 4 to 6 mm. long; fruit strongly rugose .... 39. *P. maximum.*
  Nodes glabrous; ligules 2 mm. long; fruit very obscurely rugose .... 40. *P. plenum.*

39. Panicum maximum Jacq.

Panicum maximum Jacq. Coll. Bot. 1: 76. 1786. "In insula Guadeloupe sponte crescit." In the Vienna Herbarium is a specimen from "Hb. Jacq. fil."[b] This is probably the most authentic specimen to be obtained. The plate in Jacquin's Icones[c] is an excellent illustration of the species as commonly understood.

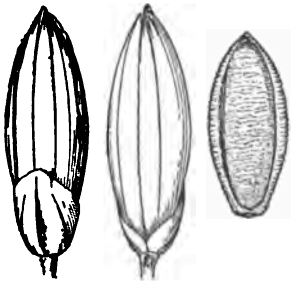


FIG. 67.—*P. maximum.* From type specimen of *P. polygamum* Swartz.

Panicum polygamum Swartz, Prodr. Veg. Ind. Occ. 24. 1788. "*India occidentalis*" is the only locality cited. The type specimen, marked "Jamaica. Swartz. P. polygamum prodr.," is in the Swartz Herbarium.

Panicum laeve Lam. Tabl. Encycl. 1: 172. 1791. "E Domingo, ins. Franc." is the only citation given. The type specimen, in the Lamarck Herbarium, is marked "Panicum laeve n. Lam. ill. gen. * * * Ste. Dominique."

Panicum jumentorum Pers. Syn. Pl. 1: 83. 1805. Based on *P. polygamum* Swartz, the description of which Persoon copies.

Panicum scaberrimum Lag. Gen. & Sp. Nov. 2. 1816. "Habitat in Nova Hispania. Introd. ann. 1804 ex seminibus per. *D. Sessé* missis." The type specimen, in the Madrid Herbarium, bears a label reading "Panicum scaberrimum sp. n. Ex h. r. m.[d] an 1804. Habitat in N. Hispania."

---

[a] Anal. Mus. Nac. Montevideo 1: 147. 1894. "Campos del Departmento de Montevideo, San José, Florida, Mercedes, etc."

[b] Nicolas Joseph Jacquin the author of the Collectiones.

[c] Icon. Pl. Rar. 1: 2. *pl. 13.* 1781–1786. This work is dated 1781–1786, but "Jacq. coll. vol. 1" is cited, which would indicate that the Collectiones appeared the earlier.

[d] Hortus regius Matritensis.

Panicum trichocondylum Steud. Syn. Pl. Glum. **2**: 74. 1854. "*Duchaising* legit in Ins. Guadaloup." The type specimen, in the Steudel Herbarium, bears a label with the data as published.

Panicum praticola Salzm.; Doell in Mart. Fl. Bras. **2**^{2}: 203. 1877. This is given as a synonym of *P. maximum* Jacq. Doell cites "*Salzmann Herb. Bahiense N. 683*," which specimen we have not seen.

DESCRIPTION.

Plants light green, 1 to 2.5 meters high, or taller in cultivation, in tufts of few to many culms, from creeping rootstocks; culms robust, erect or sometimes geniculate and rooting at the lower nodes, glabrous, the nodes usually densely hirsute; sheaths shorter than the internodes, papillose-hirsute to glabrous, ciliate, usually a dense ring of pubescence at the juncture with the blade; ligules 4 to 6 mm. long, stiffly and densely ciliate from a membranaceous base; blades erect or ascending, flat, 30 to 75 cm. long, 1 to 3.5 cm. wide, very scabrous on the margin, otherwise glabrous, or hirsute on the upper surface at the base; panicles finally long-exserted, 20 to 50 cm. long, usually about one-third as wide, densely flowered, the long, rather stiff branches ascending, naked at the base, the lower in whorls, the axils pilose, the branchlets short, appressed, bearing more or less clustered, short-pediceled spikelets; spikelets 3 to 3.3 mm. long, 1 to 1.1 mm. wide, and about as thick, oblong-ellipsoid, glabrous, somewhat shining, faintly nerved; first glume about one-third the length of the spikelet, obtuse; second glume and sterile lemma subequal, slightly exceeding the fruit, thin in texture, the lemma inclosing a staminate flower; fruit 2.3 to 2.5 mm. long, about 1 mm. wide, elliptic, transversely rugose, minutely puberulent at the apex.

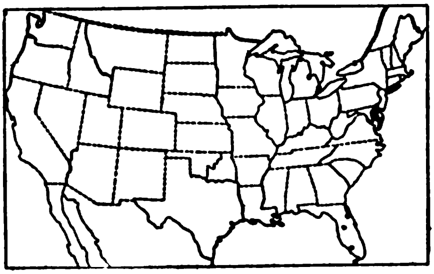


FIG. 68.—Distribution of *P. maximum.*

DISTRIBUTION.

Cultivated for forage under the name of Guinea grass in the Gulf States, especially in Florida, and southward through tropical South America, whence it has escaped into fields and waste places;[a] also in the tropical parts of the Old World.

FLORIDA: Duval County, *Fredholm* 373; Indian River, *Curtiss* 3597**; Eustis, *Nash* 1730; Grasmere, *Combs* 1170; Orange County, *Baker* in 1897; Braidentown, *Combs* 1310; Caximbas Island, *Simpson* 580; Key West, *Blodgett;* without locality, *Simpson.*

MEXICO: State of Vera Cruz, *Finck* 8 and in 1893, *Smith* 1409; Córdoba, *Kerber* 48; State of Colima, *Emrick* 3; Huitamalco, *Liebmann* 425 in part; Zacualpan, *Purpus* 3774.

---

[a] Trimen (Hand. Fl. Ceyl. **5**: 154. 1900) states the following concerning this grass: "The well-known Guinea Grass was introduced from W. Trop. Africa into Jamaica about 1774, by Mr. John Ellis, as food for some birds which he had imported. The birds died, and the seed, being thrown away as useless, yielded a magnificent grass greedily eaten by cattle and horses. It was introduced into India in 1802 by Sir John Sinclair, and must have been rapidly disseminated, for I find a specimen in Rottler's Herbarium (named *P. meneri, miliacea,* var. (?) *P. nodosum,* nob.) received from Heyne, with the date, June 3, 1808. There is no record of its introduction into Ceylon, but it is included in Moon's Catalogue, published in 1824."

Guatemala: Escuintla, *J. D. Smith* 2705, 2706; Morales, *Kellerman* 6267; Alta Vera Paz, *Cook & Griggs* 579; Gualán, *Deam* 6268.

Honduras: Cortez, *Kellerman* 4725.

Salvador: Izalco, *Pittier* 1960; San Salvador, *Velasco* in 1906; without locality, *Renson* 293.

Costa Rica: San José, *Pittier* 9050; Alajuelita, *Pittier* 2995, *Tonduz* 2995;[a] Boca Banana, *Tonduz* 9114; Zent Farm, *Pittier* in 1904.

Bermudas: *Brown & Britton* 20.

Bahamas: Nassau, *Curtiss* W. I. Pl. 124; Eleuthra, *Geogr. Soc. Baltimore* 338.

Cuba: Pinar del Rio, *Palmer & Riley* 377; El Guama, *Palmer & Riley* 178; San Diego de los Baños *Palmer & Riley* 542, 545; Guanajay, *Palmer & Riley* 816; Santiago de las Vegas, *Hitchcock* 157, *Wilson* 438; Santiago, *León & Voisard* 915, *Pollard, Palmer & Palmer* 283; Guines, *León* 427, *Liebmann* 445 in part; Herradura, *Hitchcock* 156; Guayabal, *León* 921; Marianao, *León* 957.

Jamaica: Gordon Town, *Hart* 797; Port Antonio, *Fredholm* 3319.

Porto Rico: Cayey, *Sintenis* 2468; Mayaguez, *Sintenis* 51; El Sobrante, *Eggers* 1226; Guanica, *Sintensis* 3366; Martin Pena, *Heller & Heller* 377.

Danish West Indies: St. Croix, *Ricksecker* 200, 413; St. Thomas, *Eggers* in 1887, *Millspaugh* 454.

Leeward Islands: Guadeloupe, *Duss* 3186.

Windward Islands: Martinique, *Duss* 1288; Barbados, *Dash* 259; Granada, *Broadway* in 1905.

Colombia: Santa Marta, *Smith* 2153; Magdalena, *Pittier* 1617.

Venezuela: Island of Margarita, *Miller & Johnston* 177.

Brazil: Province of Ceará, *Gardner* in 1838; Rio, *Glaziou* 18627; without locality, *Glaziou* 16612, *Riedel* 53.

40. **Panicum plenum** sp. nov.

DESCRIPTION.

Plants mostly in large clumps, 1 to 2 meters high, erect, from a stout rootstock, mostly glaucous; culms robust, compressed, glabrous, usually decumbent at base, sometimes branching at the lower nodes; sheaths overlapping on the short lower internodes, shorter than the upper, glabrous, or the lower sometimes pubescent toward the summit, more or less keeled; ligules densely ciliate, about 2 mm. long; blades erect or ascending, or the lower spreading, flat, 20 to 35 cm. long, 7 to 17 mm. wide, glabrous on both surfaces or rarely sparsely pilose on either surface toward the base, the upper surface scarcely scabrous; panicles 20 to 50 cm. long, about two-thirds as wide, the slender branches somewhat spreading, the general appearance much like that of *P. bulbosum* but proportionately wider, the main axis nearly smooth; spikelets 3 to 3.4 mm. long, 1.2 mm. wide, oblong-elliptic, glabrous, rather strongly nerved; first glume scarcely half the length of the spikelet or less, subacute, 3-nerved; second glume and sterile lemma subequal, scarcely exceeding the fruit, the palea

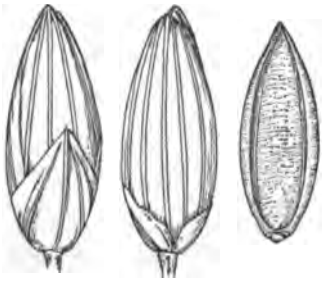


Fig. 69.—*P. plenum.* From type specimen.

---

[a] Some of the Pittier collections were distributed with the name of Tonduz as collector. The numbers are in one series, some of the plants having been collected by Pittier, some by Tonduz, and a few by Biolley. The labels may be marked, "Herb. Instit. physico-geogr. nat. costaricensis," or, "Plantae costaricenses exsiccatae."

of the sterile floret about as long as its lemma; fruit 2.9 to 3 mm. long, 1 mm. wide, elliptic, acute, only very obscurely rugose, minutely puberulent at the apex.

Type U. S. National Herbarium no. 495701, collected September 18, 1903, "at Mangas Springs, 18 miles northwest of Silver City, Grant County, New Mexico, by O. B. Metcalfe (no. 739), altitude 4,770 feet."

This species is related to *P. bulbosum* from which it is distinguished chiefly by the creeping rootstock and decumbent, not corm-like, base of the culms. Specimens lacking the base may be recognized by the compressed culm, scarcely scabrous blades, shorter first glume, and only very obscurely rugose fruit, appearing smooth except under a high power lens. Many specimens of this species have been distributed as *P. avenaceum* but an examination of the type specimen of the latter, together with the statement in the original description that the base is bulbous, shows it to be the same as *P. bulbosum*.

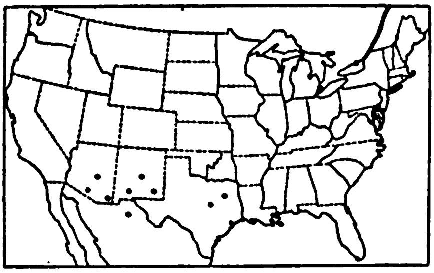


FIG. 70.—Distribution of *P. plenum*.

DISTRIBUTION.

Moist places in rocky hills and canyons, Texas to Arizona, south to southern Mexico.

TEXAS: Kerrville, *Heller* 1898; Colorado, *Tracy* 8224; without locality, *Nealley* in 1887.

NEW MEXICO: Organ Mountains, *Vasey* in 1881; *Wooton* 2017; Mangas Canyon, *Smith* in 1896; Mangas Springs, *Metcalfe* 738, 739; Mangas, *Metcalfe* 6, 80 in part, *J. K. Metcalfe* in 1897, *Smith* in 1896; Greenwood Canyon, *Smith* in 1896; Las Cruces, *Griffiths* 7400, 7401; "from Western Texas to El Paso," N. M., *Wright* 786.

ARIZONA: Santa Rita Forest Reserve, *Griffiths* 3427; Fort Huachuca, *Wilcox* in 1894; Patagonia, *Hitchcock* 3649; Dos Cabezas, *MacDougal* 789; Mustang Mountains, *Pringle* 7 in 1884 (Hitchcock Herb.); without locality, *Emersley* in 1890.

MEXICO: Chihuahua, *Wilkinson* in 1885; Durango, *Palmer* 741 in 1896; Faral, *Schumann* 1733; Orizaba, *Botteri* 160; Las Cuevas, *Hartman* 170.

41. Panicum bulbosum H. B. K.

Panicum bulbosum H. B. K. Nov. Gen. & Sp. 1: 99. 1815. "*Crescit in Novæ Hispaniæ scopulosis et frigidis juxta Santa Rosa, Los Joares et Guanaxuato, inter* 1070 *et* 1360 *hexap. altitudinem.*" The type specimen, from the Bonpland Herbarium in the Paris Herbarium, has a well developed corm. The accompanying label reads, "*Panicum bulbosum* Kunth *Synops*. 175. in scopulosis & frigidis. Nova Hisp. alt. 1070–1360 hex. No. 4250." The spikelets are 3.7 mm. long.

Panicum avenaceum H. B. K. Nov. Gen. & Sp. 1: 99. 1815. "*Crescit in regno Quitensi, in valle amoena Chilloensi et planitie Cachapamba, regione subtemperata, alt.* 1340 *hexap.*" The type specimen, from the Bonpland Herbarium in the Paris Herbarium, bears a label with the following data: "Panicum avenaceum Kunth, Synops. 175. (P. bulbosum proximum) in valle amoena Chilla. alt. 1340 h. regn. Quitensis. No. 3016." The base of the specimen is wanting, though the description states that it is bulbous. The spikelets are 4 mm. long. These slightly larger spikelets and the few hairs on the sheaths are the only characters not agreeing with those of the type of *P. bulbosum.* The author states it is closely allied to that species and scarcely different from it.

Panicum gongylodes Jacq. Eclog. Gram. 30. *pl. 21.* 1815–1820. The description is based on a plant grown in the University garden at Vienna in 1807 from seed received from the Botanical Garden at Montpellier under the name *Panicum altissimum* Brouss.[a] A specimen labeled "Panicum gongylodes Jacq." cultivated in the garden at Vienna and preserved in the Vienna Herbarium is taken as authentic if not the type. Plate 21 of the Eclogae represents *P. bulbosum.* The date on the title-page of the fascicle in which this species appears, containing numbers 21 to 40, is 1815–1820.

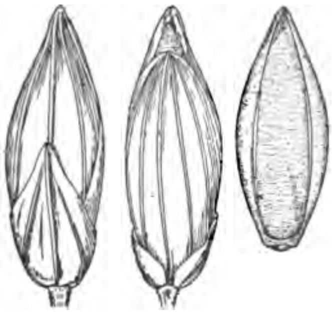


FIG. 71.—*P. bulbosum.* From type specimen.

Panicum confusum Trin.; Nees, Agrost. Bras. 174. 1829. This name, credited to "*Herb. Trin.*" is given as a synonym of *P. gongylodes* Jacq. No specimen so named was found in the Trinius Herbarium.

Panicum nodosum Willd.; Steud. Nom. Bot. ed. 2. **2**: 260. 1841. This is given as a synonym of *Panicum bulbosum* and credited to "Willd. hrb." The type, in the Willdenow Herbarium, is *P. bulbosum.*

Panicum maximum gongylodes Doell in Mart. Fl. Bras. **2**^{2}: 203. 1877. Based on *P. gongylodes* Jacq.

Panicum maximum bulbosum Vasey in Wheeler, Rep. U. S. Surv. 100th Merid. **6**: 295. 1878. Presumably based on *P. bulbosum* H. B. K. "Jacq." is erroneously given as authority for the combination.

Panicum polygamum gongylodes Fourn. Mex. Pl. **2**: 28. 1886. Based on "*P. gongylodes* Jacq."

Panicum bulbosum avenaceum Beal, Grasses N. Amer. **2**: 132. 1896. Based on *P. avenaceum* H. B. K.

Fournier[b] gives a "S. -var. violaceum" under *P. bulbosum* H. B. K., citing "*Chinantla,* in pratis (LIEBM[ANN] n. 451)" but giving no description. A specimen of this number was examined at Halle. There is also a specimen of the same in the United States National Herbarium bearing the name in Fournier's writing.

DESCRIPTION.

Plants in tufts of few to several culms, 1 to 2 meters high; culms robust, erect, glabrous, the lowest internode thickened into a hard, corm-like base, 1 to 2 cm. thick, budding at the base, sometimes one or more corms of previous years attached; sheaths shorter than the internodes, glabrous or scabrous to pilose toward the summit, the lower often appressed-pubescent at base; ligules scarcely 1 mm. long; blades erect or ascending, flat, 25 to 60 cm. long, 3 to 12 mm. wide, scabrous on the upper surface, often pilose toward the base, glabrous beneath; panicles long-exserted, 20 to 50 cm. long, usually about half as wide, rather many-flowered, the slender, flexuous branches ascending or somewhat spreading, solitary or fascicled, naked at the base, the branchlets 1 to several cm. long, bearing scarcely clustered, rather short-pediceled spikelets, the axes and pedicels very scabrous; spikelets 3.5 to 4.2 mm. long, 1.2 to 1.4 mm. wide, slightly pointed, more strongly nerved than in *P. maximum,* glabrous, commonly purplish; first glume half to two-thirds the length of the spikelet, bluntly pointed, 3-nerved; second glume shorter than the fruit and sterile lemma, the latter rarely inclosing a staminate flower; fruit 3.2 to 4 mm. long, narrowly ovate, more finely transversely rugose than in *P. maximum*, the bluntly pointed apex puberulent.

---

[a] This name was listed without description in Brouss. Elench. Hort. Monsp. 42. 1805. We have not been able to verify this reference.

[b] Mex. Pl. **2**: 27. 1886.

The type specimen of *P. bulbosum* represents the medium form of this species, which varies much in height, width of blades, and size of spikelets. Numerous specimens intermediate between this and the subspecies *sciaphilum* occur; that is, with the larger spikelets and narrower blades or smaller spikelets and wider blades.

DISTRIBUTION.

Moist places in canyons and valleys of the Rocky and Sierra Madre mountains, New Mexico and Arizona to southern Mexico.

NEW MEXICO: Animas Valley, *Mearns* 2501; Black Range, *Metcalfe* 1422; Mangas, *Metcalfe* 80 in part; Burro Mountains, *Rusby* 445b; Las Vegas, *Vasey* in 1881; White Mounains, *Wooton* 368; Organ Mountains, *Standley* in 1906.

ARIZONA: Chiricahui Mountains, *Toumey* in 1896; Rincon Mountains, *Nealley* in 1891; Huachuca Mountains, *Holzner* 1966, 2079, 2163, *Lemmon* 2912, 2914, 2916; Santa Catalina Mountains, *Griffiths* 7083; Walnut Canyon, *MacDougal* 336; Barfoot Park, *Blumer* 1341; without locality, *Rusby* in 1883.

MEXICO: Chihuahua, *Hartman* 790, *Pringle* 377, *Nelson* 6187, 6301; Sierra Madres, *Townsend & Barber* 221; San Luis Potosi, *Parry & Palmer* 958; Durango, *Palmer* 525a in 1896; Otinapa, *Palmer* 340 in 1906; Tejamen, *Palmer* 469 in 1906 in part; Rio Blanco, *Palmer* 207 in part and 207a in 1886; Puebla, *Purpus* 2908; Eslava, *Holway* 12, *Pringle* 9575; Valley of Toluca, *Pringle* 5207 (Hitchcock Herb.); State of Jalisco, *Rose* 2609; Valley of Mexico, *Bourgeau* 235, *Pringle* 6418; Territorio de Tepic, *Rose* 1999, 3361; Chinantla, *Liebmann* 441, 442; Mount Orizaba, *Bourgeau* 2794, *Seaton* 317; Oaxaca, *Conzatti & Gonzales* 243, *Nelson* 1374.

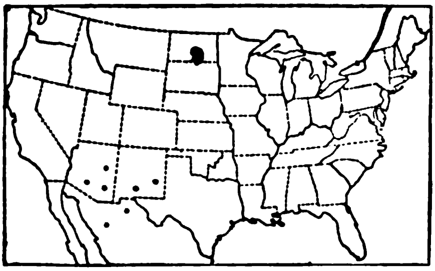


FIG. 72.—Distribution of *P. bulbosum*.

41a. Panicum bulbosum sciaphilum (Rupr.).

Panicum sciaphilum Rupr.; Fourn. Mex. Pl. **2**: 19. 1886. This name was listed without description by Ruprecht,[a] "Col. H. Gal[eotti] no. 5759 * * * Yavezia" being cited, and also by Hemsley.[b] Fournier cites "*Sierra de Yavesia*, 7,000′ (GAL[EOTTI] n. 5759 in herb. Brux. et Mus. Par.)" The type specimen is in the Brussels Herbarium.

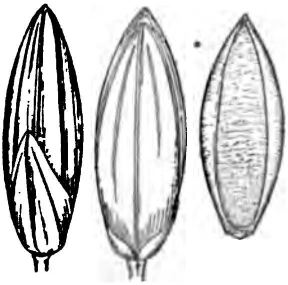


FIG. 73.—*P. bulbosum sciaphilum*. From type specimen.

Panicum bulbosum minor[us] Vasey, U. S. Dept. Agr. Div. Bot. Bull. **8**: 38. 1889. "(P. maximum, var. bulbosum, Munro)" is cited and range is given as "Texas, New Mexico, and Arizona." Wright's no. 2086 of the Mexican Boundary Survey in the National Herbarium marked "Panicum maximum Jacq. var. bulbosum Trin. (fide Munro)" is taken as the type, since this is doubtless the basis of Vasey's understanding of Munro's use of the name cited. This combination was earlier[c] listed without description by Vasey.

---

[a] Bull. Acad. Roy. Belg. 9^2: 240. 1842.

[b] Biol. Centr. Amer. Bot. **3**: 496. 1885.

[c] Grasses U. S. 11. 1883.

DESCRIPTION.

Plants less than 1 meter, sometimes only 30 to 40 cm. high; culms slender, few to many in loose clusters, the corms smaller, not over 8 mm. in diameter, commonly many together attached at the base to a rootstock; blades 10 to 40 cm., usually less than 25 cm. long, 2 to 4 mm. wide; spikelets 2.8 to 3.2 mm. long.

As limited here this subspecies includes only those specimens having both the smaller spikelets and narrower blades. Many intergrading forms are included in the species.

DISTRIBUTION.

Gravelly river banks, ravines of mesas and similar situations in the Rocky and Sierra Madre mountains from New Mexico and Arizona to central Mexico.

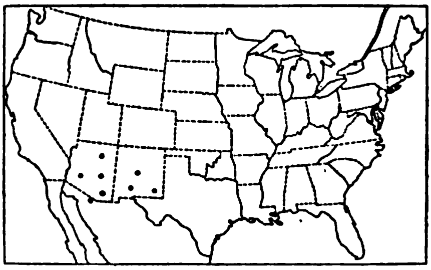


FIG. 74.—Distribution of *P. bulbosum sciaphilum.*

NEW MEXICO: Mangas, *Smith* in 1897; Las Vegas, *Vasey* in 1881; Mogollon Mountains, *Metcalfe* 357; Gray, *Earle & Earle* 180; Organ Mountains, *Hitchcock* 3784; Niggerhead Mountains near Monument no. 82, *Mearns* 1932; without locality, *Wright* 2086.

ARIZONA: Chiricahui Mountains, *Toumey* 12; Santa Rita Mountains, *Pringle* in 1884; San Francisco Mountains Forest Reserve, *Leiberg* 5816; Burro Mountains, *Rusby* 445c in part; Yavapai County, *Rusby* in 1883; Flagstaff, *Jones* 4019; Patagonia, *Hitchcock* 3716; Huachuca Mountains, *Griffiths* 4811, *Holzner* 1729, 1742, *Lemmon* 2908, 2922; Fort Huachuca, *Wilcox* in 1891; Bill Williams Mountain, *Lemmon* 3152; Beaver Creek, *Rusby* 866; without locality, *Rothrock* 296.

MEXICO: Nogales, *Griffiths* 6785½; Chihuahua, *Nelson* 6298; Cusihuiriachic, *Pringle* 1406; Otinapa, *Palmer* 348, 349, and 554 in 1906; Tejamen, *Palmer* 469 in 1906 in part; Papasquiaro, *Palmer* 467 in 1896; Territorio de Tepic, *Rose* 2053.

Virgata.—Perennials from stout rootstocks; mostly maritime species, with stout simple culms and firm foliage; ligules membranaceous, ciliate; panicles open or contracted; spikelets glabrous, mostly large, terete or thicker than wide, usually gaping, owing to the well-developed staminate floret and its palea in addition to the perfect one, the glumes and sterile lemma firm in texture, the fruit relatively rather small, smooth and shining, in some species the margins of the lemma scarcely inrolled.

Spikelets not over 2.5 mm. long, first glume less than half the length of the spikelet.
  Panicles loosely flowered; first glume truncate, about one-fifth the length of the spikelet................ 42. *P. repens.*
  Panicles rather densely flowered; first glume triangular, about one-third the length of the spikelet......... 43. *P. gouini.*
Spikelets 3 to 7 mm. long (sometimes less than 3 mm. in *P. virgatum cubense*); first glume more than half the length of the spikelet.
  Panicles elongated, strongly contracted; seacoast plants.
    Culms rarely 1 meter high, solitary from the nodes of the horizontal rootstock...................... 46. *P. amarum.*
    Culms 1 to 2 meters high, in dense tufts............ 47. *P. amarulum.*

Panicles diffuse, or only slightly contracted; plants sometimes of salt marshes but not littoral.
  Spikelets 6 to 8 mm. long; culms solitary, with a creeping base.................................. 45. *P. havardii*.
  Spikelets less than 5 mm. long (in exceptional specimens 6 mm. long); culms erect, producing numerous scaly rootstocks.
    Panicles open, loosely-flowered; spikelets 3.5 to 5 mm. long, beaked; first glume two-thirds the length of the spikelet or more, acuminate-pointed.......................... 44. *P. virgatum*.
    Panicles somewhat contracted; spikelets not over 3.2 mm. long, not beaked; first glume about half the length of the spikelet, not acuminate.................................. 44a. *P. virgatum cubense*.

42. Panicum repens L.

Panicum repens L. Sp. Pl. ed. 2. 87. 1762. "*Habitat in* Hispania? *inde missum a Claud. Alstraemer.*" The type specimen is in the Linnæan Herbarium.

Panicum notatum Retz. Obs. Bot. **4**: 18. 1786. "In Sumatra * * * D. WENNERBERG." The specimen from Sumatra in the Willdenow Herbarium labeled *Panicum notatum*, though probably not the type, agrees with the description and may be regarded as an authentic specimen.

Panicum arenarium Brot. Fl. Lusit. **1**: 82. 1804. "*Hab.* in arenosis subhumidis; occurrit in Algarbiis." We have not seen the type specimen, but the ample description and the plate given later by Brotero[a] clearly identify this species with *P. repens* L.

Panicum littorale Mohr; Vasey, Bot. Gaz. **4**: 106. 1879. "Mobile, Alabama," sent by "Mr. Chas. Mohr." The type specimen, in the National Herbarium, was collected by Dr. Mohr, July 4, 1877.

A few other names based on Old World plants, the type specimens of which we have not seen, are referred to *P. repens* as synonyms by various authors.

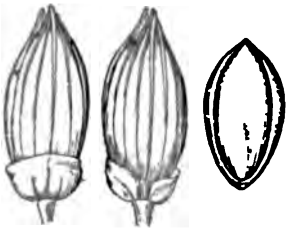


FIG. 75.—*P. repens*. From type specimens of *P. littorale* Mohr.

DESCRIPTION.

Culms rigid, 30 to 80 cm. high, erect or ascending from the nodes of strong, horizontal, often extensively creeping rootstocks, simple, clothed at the base with bladeless, overlapping sheaths; upper leaves numerous, the sheaths usually overlapping, rather loose, more or less pilose, especially along the margin, or sometimes glabrous; ligules about 1 mm. long; blades 4 to 15 cm. long, 2 to 5 mm. wide, or those of sterile shoots sometimes longer and wider, firm, stiffly ascending or spreading, often conspicuously distichous, flat or folded, long-pilose at the base on the upper surface, otherwise sparsely pilose to glabrous on both surfaces; panicles rather short-exserted, stramineous, 7 to 12 cm. long, one-third to two-thirds as wide, the somewhat distant branches stiffly ascending, rarely spreading, usually naked at the base, bearing short, appressed branchlets with short-pediceled, approximate spikelets toward the ends; spikelets 2.2 to 2.5 mm. long, 1 to 1.1 mm. wide, ovate, abruptly pointed; first glume about one-fifth as long as the spikelet, broad, loose and truncate, obscurely nerved; second glume and sterile lemma equal, 5 to 7-nerved; fruit 1.8 to 1.9 mm. long, about 1 mm. wide, obovate-elliptic.

---

[a] Brot. Phytog. Lusit. **1**: 15. *pl. 6*. 1816.

DISTRIBUTION.

Sea beaches, extensively creeping and acting as a sandbinder, along the Gulf Coast, Alabama to Louisiana, native to tropical and subtropical coasts of both hemispheres.

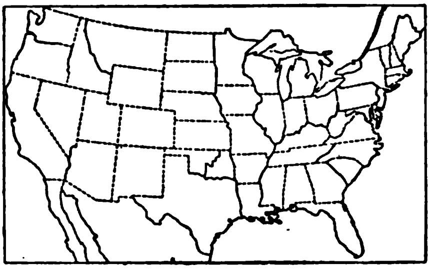


FIG. 76.—Distribution of *P. repens.*

ALABAMA: Mobile, *Curtiss* 6513, *Kearney* 17, *Mohr* in 1876, 1877, and 1882.

MISSISSIPPI: Biloxi, *Chase* 4377, *Kearney* 342, *Pollard* 1152; Horn Island, *Tracy* 3861; Ocean Springs, *Tracy* 38; Deer Island, *Tracy* in 1898.

LOUISIANA: Cameron, *Cocks* 2186, Baton Rouge (in rice fields along the Mississippi River), *Fulton* in 1907; Plaquemines County, *Langlois* in 1882; Pointe a la Hache, *Langlois* in 1884.

NICARAGUA: *Flint* in 1868.

CUBA: Habana, *León* 296, 563.

BRAZIL: Itajahy, *Ule* 567.

43. **Panicum gouini** Fourn.

Panicum gouini Fourn. Mex. Pl. **2**: 28. 1886. This name was earlier listed without description by Hemsley.[a] Fournier cites "*Vera Cruz* (GOUIN n. 4, julio)." The type specimen is in the Paris Herbarium.

Panicum gouini pumilum Fourn. Mex. Pl. **2**: 28. 1886. This name was earlier listed without description by Hemsley.[a] Fournier cites two specimens as follows: "*Vera Cruz* (VIRL[ET] n. 1300); *Antigua* in pratis humidis (LIEBM[ANN] n. 450)." The first could not be found; the second, in the Copenhagen Herbarium, is labeled "Panicum Gouini Fourn." in Fournier's writing. It consists of six small plants of this species. A specimen of this number in the United States National Herbarium, also labeled in Fournier's hand, is also this species.

Panicum repens confertum Vasey, Bull. Torrey Club **13**: 25. 1886. "Collected in Louisiana by A. B. Langlois." The type, in the National Herbarium, was collected "In sandy beach of Gulf, B[ay] St. Louis, Miss., 13 Sept., 1883," the published locality being an error, doubtless due to the fact that the printed label bears Langlois's home address, "Pointe-a-la-Hache, La.," the written locality being overlooked.

Panicum halophilum Nash in Lloyd & Tracy, Bull. Torrey Club **28**: 86. 1901. Based on "*P. repens* L. var. *confertum* Vasey, not *P. confertum* Desv. 1816." A description is given and one specimen cited, Petit Bois Island, Miss., *Tracy* 4566.

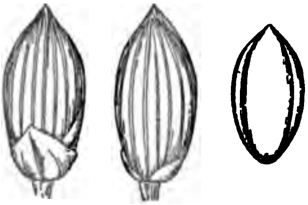


FIG. 77.—*P. gouini.* From type specimen.

---

[a] Biol. Centr. Amer. Bot. **3**: 489. 1885.

DESCRIPTION.

Plants like *P. repens* in habit; culms on the average lower, rarely over 30 cm. high; sheaths and blades usually glabrous, more crowded than common in *P. repens;* panicle smaller, narrower, more densely flowered, commonly purple; spikelets 2 to 2.4 mm. long, about 1 mm. wide; first glume broadly triangular, one-third to nearly half the length of the spikelet; second glume slightly shorter than the sterile lemma.

This species is closely allied to *P. repens* and approached by occasional specimens of that species, which varies more than does this.

DISTRIBUTION.

Sea beaches, along the Gulf Coast from Alabama to Louisiana and south to Vera Cruz; also on the coast of Uruguay. We have seen no specimens of this species from the Old World.

ALABAMA: Mobile, *Mohr* in 1881.

MISSISSIPPI: Mississippi Sound, *Smith* in 1885; Horn Island, *Tracy* 7753; Deer Island, *Seymour* in Seymour & Earle Mex. Gulf Fl. 91825; Ship Island, *Tracy* in 1898; Petit Bois Island, *Tracy* 4566; Bay St. Louis, *Langlois* in 1883.

MEXICO: Vera Cruz, *Müller* 2177, *Pringle* 5569 (Hitchcock Herb.); Antigua, *Liebmann* 450; Coatzacoalcos, *C. L. Smith* 913.

URUGUAY: Maldonado, *Baldwin* (Hitchcock Herb.).

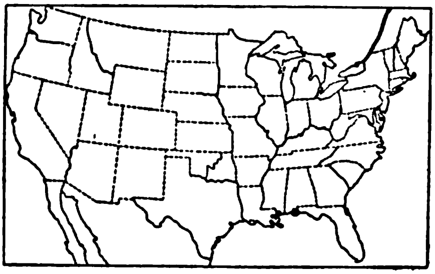


FIG. 78.—Distribution of *P. gouini.*

44. Panicum virgatum L.

Panicum virgatum L. Sp. Pl. 59. 1753. Linnæus gives a short diagnosis of his own, also quotes a diagnosis from Gronovius, and gives as habitat "Virginia." The type specimen, in the Linnæan Herbarium, appears to have been received from Gronovius as the sheet bears Gronovius's phrase name and the number 578, which is the Clayton number referred to by Gronovius.[a] Gronovius's specimen of Clayton's no. 578, in the herbarium of the British Museum agrees with the Linnæan specimen. These represent the medium form of the species with open panicle and spikelets 4.1 to 4.2 mm. long. Clayton's no. 606 is the same.

Panicum coloratum Walt. Fl. Carol. 73. 1788, not L. 1767. There is no specimen of this in Walter's herbarium. The brief description applies well to *P. virgatum*, to which Pursh[b] referred Walter's species.

Eatonia purpurascens Raf. Journ. de Phys. **89**: 104. 1819. For locality the author gives "Dans les marais maritimes de New-York, etc." In the De Candolle Herbarium is a specimen from Rafinesque so named by him. It bears the data "Long Island, Rafinesque 1819." This consists of a leaf and a narrow panicle of *P. virgatum*, with spikelets 3.5 mm. long. Rafinesque's description well agrees with this species but his comparisons of it with other genera and especially the names he gives as synonymous are misleading.[c]

Panicum pruinosum Bernh.; Trin. Gram. Pan. 191. 1826. This is given as a synonym of *P. virgatum β glaucum*. Trinius states "V. spp. Am. bor. (BERNHARDI sub nom. *Panici pruinosi.*)" The type, in the Berlin Herbarium, is labeled by Bernhardi "Panicum pruinosum mihi, Delaware, affine *P. virgato.*" The spikelets are 4.5 mm. long.

---

[a] Fl. Virg. **2**: 133. 1743.

[b] Fl. Amer. Sept. **1**: 67. 1814.

[c] See Scribner, Rhodora **8**: 137–138. 1906.

Panicum giganteum Scheele, Linnaea **22**: 340. 1849. "Im trockenen felsigen Flussbett des Cibolo zwischen San Antonio und Neubraunfels: Lindheimer. August." We have not seen the type, but in the Engelmann Herbarium is a specimen of *P. virgatum* collected by Lindheimer, which appears to be a duplicate type. It is labeled "Auf felsigen Boden im Bett der Cibolo. Sept."

Panicum glaberrimum Steud. Syn. Pl. Glum. **1**: 94. 1854. "Cultum ex H. Berol. sem. 1840. sub Ichnanthus glaber. *Link*. Am. sptr." The type, in the Steudel Herbarium, is labeled "*Panicum glaberrimum* Steud. Cultum in H. Berol. comun. Hohenacker."

Ichnanthus glaber Link; Steud. Syn. Pl. Glum. **1**: 94. 1854. This name is mentioned under *Panicum glaberrimum.*

Panicum kunthii Fourn.; Hemsl. Biol. Centr. Amer. Bot. **3**: 490. 1885, not Steud. 1841. Based on "Panicum coloratum Kunth, Enum. * * * not L." Kunth refers "*P. virgatum* Muhl." to *P. coloratum* L. as a synonym, probably basing this reference upon a note which Muhlenberg[a] appends to his description of *P. virgatum*, "'Non *virgatum* sed coloratum L.' Smith." The species described by Muhlenberg under this name is true *P. virgatum* L., and the specimen so labeled in the Muhlenberg Herbarium must be taken as the type of *P. kunthii* Fourn. Fournier intended to change the name of *P. coloratum* Kunth, not L., which must refer to the Muhlenberg species, as the other references are to *P. coloratum* L. Fournier's later description[b] of *P. kunthii* and the specimens cited refer to *P. elephantipes.* A synonym cited, *P. arenarium* [Brot. misapplied by] Schlecht., is *P. gouini.*

Panicum ichnanthoides Fourn. Mex. Pl. **2**: 30. 1886. This name was earlier listed without description by Hemsley.[c] Fournier cites "*Orizaba* (F. MÜLL[ER] n. 2082 in herb. PETROP.)" The specimen in the herbarium of the Botanical Garden in St. Petersburg labeled as above is *Müller* 2002, the number as printed being an error. The panicle is narrow, the spikelets 3.5 to 3.8 mm. long.

Panicum virgatum confertum Vasey, Bull. Torrey Club **13**: 26. 1886. Vasey gives no definite locality, merely stating that the variety grows, "particularly on the sea coast." The type, in the National Herbarium, is labeled "Seashore at Atlantic City, N. J., Geo. Vasey, 1884." The panicles are narrow and compact, about 20 cm. long and 5 cm. wide. The spikelets are about 3.5 mm. long.

Panicum virgatum elongatum Vasey, Bull. Torrey Club **13**: 26. 1886. No definite locality is given. The type, in the National Herbarium, was collected at White River, South Dakota, August, 1892, by E. N. Wilcox, no. 13. This is an immature specimen, the long narrow panicle and slender spikelets, as described, being due to immaturity. This name is not based on *P. elongatum* Pursh, since Vasey says, "perhaps this is the *Panicum elongatum* of Pursh."

Panicum virgatum diffusum Vasey, Bull. Torrey Club **13**: 26. 1886. "Sandy prairies, Kansas, Colorado, etc." No specimen bearing this name can be found in the National Herbarium nor any from Kansas or Colorado collected before 1886. Palmer's no. 376 from Indian Territory in 1868, with a very large and diffuse panicle and marked "P. virgatum?" by Vasey well answers his brief description.

DESCRIPTION.

Plants erect, usually 1 to 2 meters high, producing numerous scaly, creeping rootstocks, glabrous throughout except as noted, commonly purple tinged, often glaucous, especially on the internodes and upper surface of the blades; culms in large to small clumps or even solitary, simple, robust, tough and hard; sheaths longer than the rather short lower internodes, usually shorter than the upper ones, often ciliate, sometimes villous at the throat; ligules dense, 2 to 4 mm. long; blades ascending, 10 to 60 cm. long, 3 to 15 mm. wide, slightly narrowed toward the base, and gradually long-acuminate, flat, sometimes pilose on the upper surface toward the base, rarely to the apex, margins scabrous; panicles long-exserted, 15 to 50 cm. long, mostly one-third to half as wide, but sometimes contracted, or very loose and nearly as wide as long, usually many-flowered, the slender, scabrous, usually fascicled branches ascending or spreading, naked at base, repeatedly branching along the upper half or two-thirds; spikelets rather short-pediceled, 3.5 to 5 mm., rarely but 3 or as much as 6 mm. long, 1.2 to 1.5 mm. wide, elliptic-ovate, acuminate, strongly nerved; first glume clasping, two-thirds to three-fourths the length of the spikelet, rarely equaling the sterile lemma, acuminate to cuspidate, 5-nerved; second glume longer than the sterile lemma, both much exceeding the fruit, 5 to 7-nerved; fruit narrowly ovate, the margins of the lemma inrolled only at base.

---

[a] Descr. Gram. 120. 1817.

[b] Mex. Pl. Gram. **2**: 29. 1886.

[c] Biol. Centr. Amer. Bot. **3**: 490. 1885.

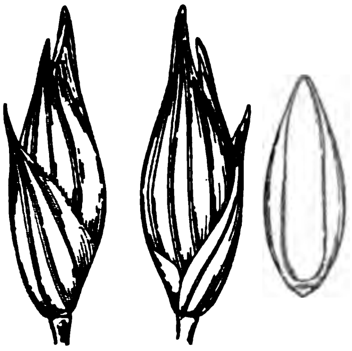


FIG. 79.—*P. virgatum.* From type specimen in Gronovius Herbarium.

This species is well marked but variable. The blades are usually glabrous or pilose above near the base only. Sometimes, however, the entire upper surface or even both surfaces are pilose. Examples of this are: MINNESOTA: *Mearns* 743; SOUTH DAKOTA: *Thornber;* NEBRASKA: *Rydberg* 1561; KANSAS: *Smyth* 92; GEORGIA: *Tracy* 3604, *Harper* 631; FLORIDA: *Combs* 597; ALABAMA: *Carver* 72; MISSISSIPPI: *Chase* 4459.

The form named by Vasey *P. virgatum confertum*, with more or less compact panicles, is represented by: NEW JERSEY: *Scribner* in 1895, *Vasey* in 1884, *Ward* in 1884; VIRGINIA: *Knowlton* in 1897; NORTH CAROLINA: *McCarthy* in 1885; FLORIDA: *Kearney* 158.

The size of the panicle is variable, in northern specimens being often much dwarfed. The branches may be stiffly ascending or laxly spreading or drooping, these characters not being coördinate with others. The glaucous character also appears to be without significance in separating forms, glaucous and green individuals growing under the same conditions. All these variations are connected by all shades of intergradation with the typical form.

Throughout the western portion of the range of the species there is found, chiefly on sandy soil, a form with mostly single or loosely cespitose culms, often decumbent at base, pale green or glaucous foliage, and small panicles with ascending branches. We have been unable to separate this form as a subspecies because of the numerous intergrading specimens. The following, which are not cited under the distribution of the species, are representative of this form: SOUTH DAKOTA: Huron, *Williams* in 1892; Bellefourche, *Griffiths* 395; White River, *Wallace* 3, 4, 5; IOWA: Cherokee County, *Crozier* in 1888; NEBRASKA: Sidney, *Plank* 13; Mullen, *Rydberg* 1597; KANSAS: Morton County, *Hitchcock* Pl. Kans. 570a; TEXAS: Tascora, *Reverchon* 2844; Channing, *Williams* 3061; COLORADO: Raton Mountains, *Griffiths* 5463; ARIZONA: Flagstaff, *MacDougal* 265; without locality, *Lemmon* 3154.

The spikelets are frequently affected by a smut, this sometimes resulting in abnormal forms with spikelets in glomerules or with two to several staminate or abortive florets to a spikelet, as in *Sandberg* from Minnesota in 1891 and *Brandegee* from Colorado in 1878.

DISTRIBUTION.

Prairies, moist open ground, open woods and salt marshes, Maine to Wyoming and south to Florida and Arizona, southwest through Mexico to Costa Rica; also in the Bermudas and Trinidad.

MAINE: Scarboro, *Chamberlain* 552.

NEW HAMPSHIRE: Walpole, *Fernald* 271 (N. E. Bot. Club Herb.).

Vermont: Brattleboro, *Grout* in 1895.

Massachusetts: South Hadley, *Cook* in 1887.

Rhode Island: Newport, *Hitchcock* 170.

Connecticut: Fairfield, *Eames* in 1896; South Glastonbury, *Wilson* 1251.

New York: Cayuga Lake, *Dudley* in 1884.

Ontario: Toronto, *Macoun* 26324.

New Jersey: Stockton, *Fisher* in 1897; Camden, *Scribner* 104; Atlantic City, *Scribner* in 1895, *Vasey* in 1884, *Ward* in 1884.

Pennsylvania: Easton, *Porter* in 1895; Sayre, *Barbour* in Kneucker Gram. Exs. 302; Safe Harbor, *Heller* in 1893; Harrisburg, *Small* in 1888.

Ohio: Sandusky, *Morris* 53, 124; Columbus, *Fischer* 6801; Cedar Point, *Wilkinson* 6805.

Indiana: Dune Park, *Umbach* 1922; Indiana Harbor, *Deam* 2638; Pine, *Umbach* in 1898; Clarke, *Umbach* in 1896; Lafayette, *Dorner* 12, 85.

Illinois: Lake County, *Gleason & Shobe* 326; Chicago, *Chase* 1178, 1636; Joliet, *Skeels* 470; Oregon, *Waite* in 1885; Thawville, *Wilcox* 100; Wady Petra, *V. H. Chase* 73 in 1897; Princeville, *V. H. Chase* 818; Peoria, *Brendel*, *McDonald* 59; Athens, *Hall* in 1870.

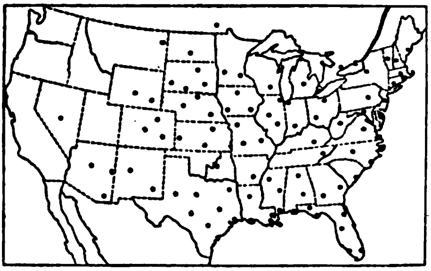


Fig. 80.—Distribution of *P. virgatum*.

Michigan: Lansing, *Beal* in 1881 (Hitchcock Herb.).

Wisconsin: Witches Gulch, *Cheney* 3868; without locality, *Wood* in 1889.

Minnesota: Pipestone City, *Sheldon* in 1891; Chippewa County, *Moyer* 42; St. Paul, *Blanchard* in 1890; Fort Snelling, *Mearns* 743 in part, 758, 769, 793.

Manitoba: Brandon, *Macoun* 13231; Assiniboine River, *Macoun* 29303; Red Deer River, *Macoun* 29304.

Saskatchewan: Saskatoon, *Macoun* 73003.

North Dakota: Minot, *Waldron* 1813; Davenport, *Wright* 1866; Dunseith, *Brannon* 99.

South Dakota: Aberdeen, *Griffiths* 82, 132; Black Hills, *Rydberg* 1097; Frankfort, *Griffiths* 53; Huron, *Griffiths* 22; Aurora, *Wilcox* 54; Brookings, *Wilcox* 15; Jamesville, *Bruce* 16; Grindstone, *Griffiths* 751; Bellefourche, *Griffiths* 371; Redfield, *Griffiths* 206; White Horse Camp, *Griffiths* 295; Zell, *Griffiths* 242; Dell Rapids, *Thornber* in 1892; White River, *Wilcox* 13.

Iowa: Armstrong, *Shimek* 63; Spirit Lake, *Geyer* in 1839; Fayette County, *Fink* 459; Mount Pleasant, *Mills* 770; Iowa City, *Somes* 189, 219; Murray, *Morris* A 294.

Nebraska: North Platte, *Rydberg* 2516, *Shear* 767; Talmage, *Elmore* 6, 126; Pishelville, *Clements* 2742; Broken Bow, *Plank* 57; Mullen, *Rydberg* 1561.

Missouri: Courtney, *Bush* 705 in part, 4038; Allenton, *Letterman* in 1892; Jefferson County, *Eggert* in 1896; Monteer, *Bush* 5105.

Kansas: Manhattan, *Hitchcock* 3840; Riley County, *Norton* 570; Hutchinson, *Smyth* 9; Osborne City, *Shear* 223; Wichita, *Smyth* 230, 257; Florence, *Griffiths* 5047; Morton County, *Hitchcock* 627½; Platt, *Smyth* 92.

Delaware: Kimensi, *Commons* in 1897.

Maryland: Cumberland, *Shriver* 610; River View, *Blanchard* in 1891; Bay Ridge, *Scribner* in 1897; Chesapeake Beach, *Chase* 2528, *Hitchcock* 442, 2391, *House* 358; Anne Arundel County, *Smith* in 1879; High Island, *Dewey* 134, *Steele* in 1896, *Scribner* in 1894; Great Falls, *Steele*.

District of Columbia: *Kearney* in 1897, *Pollard* 595, *Steele* in 1896, *Ward* in 1871.

Virginia: Chain Bridge, *Chase* 3623; Rosslyn, *Topping* in 1895; Hampton, *McCarthy* in 1883; Virginia Beach, *Hitchcock* 171, *Kearney* 2018; Dismal Swamp, *Chase* 3676; Walnut Point, *Knowlton* in 1897.

West Virginia: Tucker County, *Greenman* 47 (Gray Herb.).

North Carolina: Wilmington, *Kearney* 267a; Tarboro, *McCarthy* in 1883 and 1885; Swanquarter, *Ashe* in 1898; West Raleigh, *Stanton* 1283; Biltmore, *Biltmore Herb.* 700c.

South Carolina: Charleston, *Donaldson* in 1888; Isle of Palms, *Hitchcock* 226; St. Helena Island, *Cuthbert* in 1905.

Georgia: Early County, *Harper* 1220; Sumter County, *Harper* 429, 631, 1037; Albany, *Tracy* 3604.

Florida: Jacksonville, *Curtiss* 3609, 5084, *Combs* 8, 14, *Kearney* 158; Baldwin, *Combs* 63, 66; Lake City, *Combs* 119; Madison, *Combs* 235, 267; Monticello, *Combs* 348; Apalachicola, *Biltmore Herb.* 700b; De Funiak Springs, *Combs* 437, 458, 473, 475; Bay Head, *Combs* 645, 646, 647, 654; Chipley, *Combs* 537, 579, 597; Old Town, *Combs* 887; Gainesville, *Combs* 722; Waldo, *Combs* 695, 703; Eustis, *Nash* 1761; Manatee, *Combs* 1297; Arcadia, *Combs* 1249, 1280; Myers, *Hitchcock* Lee Co. Pl. 491; Miami, *Chase* 3900, *Hitchcock* 728; without locality, *Rugel* 595.

Kentucky: Clays Ferry, *Peter* in 1834 (Ky. State Univ. Herb.).

Tennessee: Hollow Rock, *Biltmore Herb.* 700a.

Alabama: Valley Head, *Ruth* 76; Auburn, *Earle & Baker* in 1897, *Tracy* in 1897; Birmingham, *McCarthy* in 1888; Tuskegee, *Carver* 72; Mobile, *Kearney* 20 in part.

Mississippi: Starkville, *Chase* 4459, 4460, *Kearney* 82; Waynesboro, *Kearney* 168; Jackson, *Smith* in 1885; Batesville, *Eggert* 126; Biloxi, *Tracy* 3660, 3762 in part, 3763; Ocean Springs, *Kearney* 298, *Tracy* in 1889; Point St. Martin, *Tracy* 4565; Bay St. Louis, *Langlois* 34.

Arkansas: Batesville, *Coville* in 1887; Benton County, *Plank* 68; without locality, *Harvey* in 1882.

Louisiana: Oberlin, *Ball* 192.

Texas: Dallas, *Reverchon* 1622; Gill County, *Jermy* 219; Jacksonville, *Plank* 18; Clarksville, *Plank* 4; Trinity Bay, *Joor* in 1884; Wallisville, *Wallis* in 1880; Gillespie County, *Jermy* 787; Luling, *Plank* 21; Lampasas, *Joor* 23; Harris County, *Joor* 34; Paloduro, *Gardner* 18; Texline, *Griffiths* 5664; Waller County, *Thurow* in 1898; Eagle Pass, *Havard* 84; Fort Concho, *Havard* in 1881; Moore County, *Carleton* 422; without locality, *Lindheimer* 733, *Reverchon* 22, 32.

Oklahoma: Verdigris River, *Blankinship* in 1895; False Washita, *Palmer* 376 in 1868; without locality, *Sheldon* in 1891.

Montana: Glendive, *Ward* in 1883.

Wyoming: Laramie County, *A. Nelson* 3626, *E. Nelson* 330, 476; Glen Rock, *A. Nelson* 8386.

Colorado: Fort Collins, *Crandall & Cowen* 550; Denver, *Tracy* 912; Millers Ranch, *Fry* 3371; Golden, *Rydberg* 2508, *Shear* 756; Meadow Park, *Shear* 606; La Veta, *Shear* 819; Canyon City, *Shear* 980; Trimble Springs, *Baker, Earle & Tracy* 962, *Selig* 1264; La Salle, *Rydberg* 2512.

Nevada: Ash Meadows, *Purpus* in 1898.

New Mexico: Tesuque, *Wooton* 2936; Grant County, *Rusby* 445; Pecos, *Standley* 5289.

Arizona: San Francisco Mountains, *Leiberg* 5732; Tuscon, *Toumey* 781½; Oak Creek, *MacDougal* 474; Yavapai County, *Rusby* in 1883; Beaver Creek, *Rusby* in 1883; Flagstaff, *Toumey* in 1894; Turkey Tanks, *Wooton* 2001.

Mexico: State of Jalisco, *Palmer* 207 and 510 in 1886; Chiapas, *Nelson* 2975; Orizaba, *Botteri* 648.

Honduras: San Pedro Sula, *Thieme* 532.

Costa Rica: Buenos Aires, *Tonduz* 3619.

Bermudas: *Brown & Britton* 358, *Moore* 2850 (both in Field Mus. Herb.).

Trinidad: Without data (Gray Herb.).

44a. Panicum virgatum cubense Griseb.

Panicum virgatum cubense Griseb. Cat. Pl. Cub. 233. 1866. The only specimen mentioned by Grisebach is, "Wr. a. 1865," that is, collected in Cuba by Wright in 1865. The type, in the Grisebach Herbarium, bears the number 183 and is labeled "Low savannas, Hanabana, May 19."

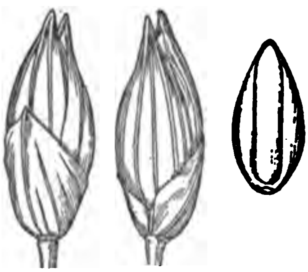


FIG. 81.—*P. virgatum cubense.* From type specimen.

Panicum virgatum obtusum Wood, Bot. & Flor. 392. 1874. "N. J." [New Jersey]. The whereabouts of the type, if it be in existence, is not known. The diagnosis "Panicle contracted; spikelets smaller, not pointed, obtusish," seems sufficiently to indicate this subspecies.

Panicum virgatum breviramosum Nash, Bull. Torrey Club **23**: 150. 1896. "Collected by Dr. Small in clay soil in the pine lands about Augusta, Georgia, where it was common, June 27–July 1, 1895." The type, in Columbia University Herbarium, is a slender plant with narrow panicles about 12 cm. long and 3 to 4 cm. wide, rather compactly flowered, and as a whole very like Wright's no. 183 mentioned above.

DESCRIPTION.

Differs from *P. virgatum* in having culms more slender than usual in the species, solitary or few in a clump, usually narrow panicles with ascending branches, and smaller spikelets, 2.8 to 3.2 mm. long, the first glume usually about half the length of the spikelet, acute but usually not acuminate-pointed, the second glume and sterile lemma about equal and but slightly exceeding the fruit, the latter about 2 mm. long.

This combination of characters fails to hold throughout. A few of the specimens cited below have open panicles, but the small, obtuse spikelets with shorter first glume; others have the panicle characteristic of the subspecies but an acuminate-pointed first glume to the small spikelets. The following represent these intermediate specimens: CONNECTICUT: *Graves* 244; NEW JERSEY: *Pearce* in 1884; NORTH CAROLINA: *McCarthy* in 1885; FLORIDA: *Chase* 3859, 3860, *Hitchcock* 743, *Hume* 37.

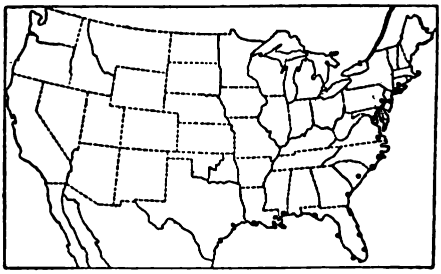


FIG. 82.—Distribution of *P. virgatum cubense.*

DISTRIBUTION.

Pine woods, the Atlantic Coastal Plain from Connecticut to Florida; also in the Bermudas and Cuba.

CONNECTICUT: Groton, *Graves* 244.

NEW YORK: Aquebogue, *Scribner* in 1872 (Hitchcock Herb.).

NEW JERSEY: Atsion, *Chase* 3573; New Durham, *Van Sickle* in 1895; without locality, *Pearce* in 1884.

PENNSYLVANIA: Philadelphia, *Smith* 109.

MARYLAND: College Park, *Novik* in 1907.

VIRGINIA: Ashland, *DeChalmot;* Portsmouth, *Noyes* 87.

NORTH CAROLINA: Edenton, *Kearney* 1899; Tarboro, *McCarthy* in 1885; Wilmington, *Chase* 3144, *Coville* 104, *Kearney* 267b; Hendersonville, *Biltmore Herb.* 700e.

South Carolina: Elgin, *House* 2575; Camden, *House* 2668.
Georgia: Camp Cornelia, *Ricker* 936; Augusta, *Cuthbert* 1015, *Small* in 1895.
Florida: Homosassa, *Combs* 930; Cedar Key, *Combs* 774; Jensen, *Hitchcock* 743; Sanibel Island, *Hume* 37; Miami, *Chase* 3859, 3860; Big Pine Key, *Simpson* 335.
Mississippi: Scranton, *Pollard* 1201; Biloxi, *Tracy* 3762 in part.
Bermudas: *Stone* in 1888 (Acad. Phil. Herb.).
Cuba: Batábano, *Hitchcock* 153; *Palmer & Riley* 1134; without locality, *Wright* 3873.

45. Panicum havardii Vasey.

Panicum virgatum macranthum Vasey, Bull. Torrey Club **13:** 26. 1886, not *Panicum macranthum* Trin. 1826. "Collected by Dr. Havard, in the Guadalupe Mountains, Texas." The type, in the National Herbarium, collected in 1881, is labeled in Vasey's hand with the data as published. It consists of the upper portion of a robust culm, the large and open panicle measuring 40 cm. long and 30 cm. wide, the spikelets nearly 7 mm. long.

Panicum havardii Vasey, Bull. Torrey Club **14:** 95. 1887. Based upon the type of *Panicum virgatum macranthum* Vasey.

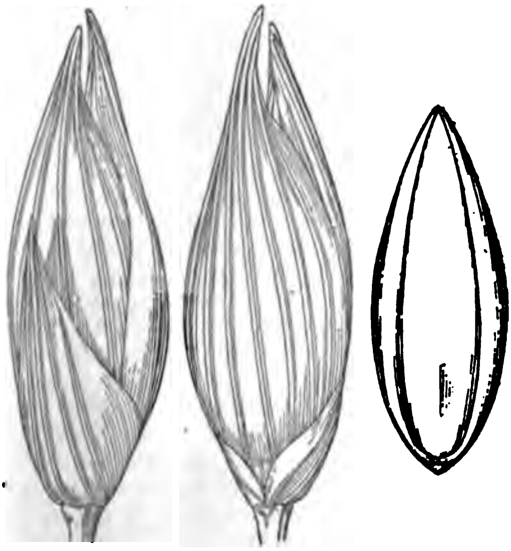


FIG. 83.—*P. havardii*. From type specimen.

DESCRIPTION.

Plants 1 meter or more tall, pale green, glaucous, glabrous throughout; culms robust, solitary, erect from creeping rootstocks, simple; sheaths longer than the internodes; ligules dense, about 3 mm. long; blades erect or ascending, 25 to 40 cm. long, 5 to 10 mm. wide, broadest at the base, tapering into long, involute-setaceous tips, sometimes pilose on the upper surface at the base; panicles short-exserted, as much as 40 cm. long, half to three-fourths as wide, loosely flowered, the mostly verticillate branches ascending or finally spreading; spikelets 6 to 8 mm. long, about 2 mm. wide, ovate, acuminate, strongly nerved; first glume clasping, half to two-thirds the length of the spikelet, acuminate; second glume slightly shorter than the sterile lemma, both exceeding the fruit, 7 to 9-nerved; fruit 4.5 to 5 mm. long, about 1.8 mm. wide, narrowly ovate, the margin of the lemma inrolled only at base.

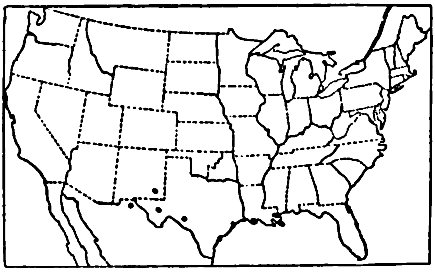


FIG. 84.—Distribution of *P. havardii*.

This apparently rare species resembles *P. virgatum* from which it differs in the decumbent base of the solitary culms and in the larger spikelets.

DISTRIBUTION.

Arroyos and sandhills, western Texas, New Mexico, and northern Mexico.

TEXAS: Guadalupe Mountains, *Havard* in 1881; without locality, *Nealley* in 1887.
NEW MEXICO: Las Vegas, *Vasey* in 1880; Roswell, *Griffiths* 5735.
MEXICO: Paso del Norte, *Pringle* 1124 (Hitchcock Herb.).

46. Panicum amarum Ell.

Panicum amarum Ell. Bot. S. C. & Ga. **1**: 121. 1816. "Grows among the sandhills on the seashore," presumably of South Carolina and Georgia. No specimen of this could be found in the Elliott Herbarium.[a] The description is as follows: "Plant very glabrous; leaves thick, glaucous; panicle appressed; glumes acuminate. *Root* perennial? *Stem* 2-3 feet high, columnar, thick, nearly an half inch in diameter. *Leaves* nearly flat, almost coriaceous, the margins very entire; sheaths shorter than the joints, tinged with yellow; the throat contracted, purple; stipules villous. *Panicle* large, branches all appressed. *Flowers* very large. *Peduncles*, which in every other species are very scabrous, and generally hairy, are glabrous and nearly smooth. *Calyx* 2-flowered, hermaphrodite and male; valves glabrous and tinged with purple. *Corolla*, valve of the male floret as large as those of the hermaphrodite. * * * Grows among the sandhills on the seashore. Leaves excessively bitter." The greater part of this description will be seen to apply equally well to the cespitose species to which the name *P. amarum* has been applied and to *P. amaroides* Scribn. & Merr. Scribner and Merrill[b] accepted the cespitose form as the true *P. amarum*, but the fact that *P. amaroides* and not the cespitose species grows on the coast of North and South Carolina, and especially that it is abundant on the Isle of Palms in Charleston Harbor, Elliott's own locality, casts doubt on the correctness of this identification of Elliott's species. In the description quoted above "Panicle appressed" seems to indicate *P. amaroides*, as does the query after "root perennial." There could be no doubt about the cespitose species (unless one had only a specimen without the base), while in *P. amaroides* the horizontal rootstock is deep in the sand and the solitary culms are readily detached from it. "Stem 2-3 feet high" applies much better to *P. amaroides*, since the allied species is rarely as low as 3 feet. "Leaves excessively bitter" is true of *P. amaroides* while those of the cespitose species are but slightly or not at all bitter. On the whole the evidence is so strongly in favor of *P. amaroides* as

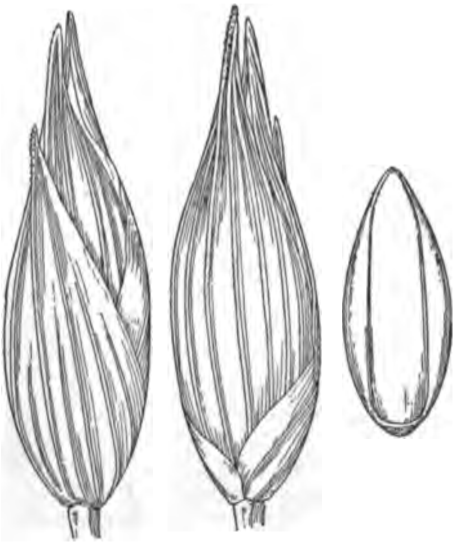


FIG. 85.—*P. amarum*. From type specimen of *P. amarum minus* Vasey.

---

[a] Scribner and Merrill (U. S. Dept. Agr. Div. Agrost. Circ. **29**: 5. 1901) state that "The specimen in the Herbarium of Elliott under this name is a robust form of *Panicum virgatum* Linn." This name, however, was added later, since it is initialed "H. W. R." [Ravenel.] The original label bears an unpublished name.

[b] U. S. Dept. Agr. Div. Agrost. Circ. **29**: 5. 1901.

the plant described by Elliott as *P. amarum* that we are forced to apply his name to the species named *P. amaroides*. In the herbarium of the Philadelphia Academy is a specimen of this species bearing two tickets reading respectively "*Panicum amarum*" and "Elliott S. C.," the former being in the handwriting found in the Elliott Herbarium. While this may not be the type, it would seem to be an authentic specimen. A second specimen of this species in the same herbarium bears a ticket reading "Georg. Baldw."

Panicum amarum minor[*us*] Vasey & Scribn. U. S. Dept. Agr. Div. Bot. Bull. **8**: 38. 1889. "Fortress Monroe, Va., and northward, near the coast." The type specimen, in the National Herbarium, was collected by Dr. Vasey at Fort Monroe, Va., in 1879.

Panicum amaroides Scribn. & Merr. U. S. Dept. Agr. Div. Agrost. Circ. **29**: 5. *f. 1.* 1901. Based on *P. amarum minus* Vasey & Scribn.

DESCRIPTION.

Plants glaucous and glabrous throughout; culms solitary from the nodes of extensively creeping, horizontal rootstocks, simple or occasionally branching from the lower nodes, 30 cm. to 1 meter high; sheaths overlapping but commonly narrow and partially exposing the short, very glaucous internodes; ligules dense and silky, about 3 mm. long; blades ascending or spreading, thick, 10 to 30 cm. long, 5 to 12 mm. wide, broadest at the base, flat below, involute toward the tip, margins smooth; panicles short-exserted or included at base, one-fourth to one-third the height of the plant, or sometimes more, not over 3 cm. wide, mostly few-flowered, the distant, appressed branches bearing scattered, short, appressed branchlets with approximate, short-pediceled spikelets; spikelets 5 to 6.5 mm. long, about 2 mm. wide and as much as 3 mm. thick, narrowly ovate, acuminate, strongly nerved; first glume clasping, two-thirds to three-fourths the length of the spikelet, acuminate, 7 to 9-nerved, the midnerve usually scabrous toward the apex; second glume slightly longer than the sterile lemma, both much exceeding the fruit, 9-nerved, the midnerves scabrous toward the apex; fruit 3.5 mm. long, about 1.5 mm. wide, narrowly ovate.

DISTRIBUTION.

Sandy seashores and coast dunes, Connecticut to Georgia; also on islands off the coast of Mississippi. An important sand binder.

CONNECTICUT: New Haven, *Winton* in 1887.

NEW YORK: Long Island, *Miller*, *Young* in 1872; Staten Island, *Tylcr* in 1895.

NEW JERSEY: Cape May, *Burk* in 1881 (Hitchcock Herb.).

DELAWARE: Cedar Neck, *Commons* 228 in 1875; Lewes, *Hitchcock* 227; without locality, *Canby*.

MARYLAND: Bay Ridge, *Scribner* in 1897.

VIRGINIA: Fort Monroe, *McCarthy* in 1883, *Vasey* in 1879; Portsmouth, *Noyes* 66 in 1895; Ocean View, *Vasey* in 1890; Virginia Beach, *Hitchcock* 169, *Kearney* 2064, *Mackenzie* 1736, *Williams* 3089.

NORTH CAROLINA: Ocracoke Island, *Kearney* 2317; Brunswick County, *McCarthy;* Wilmington, *Hitchcock* 441; without locality, *McCarthy* in 1885.

SOUTH CAROLINA: Isle of Palms, *Chase* 4555.

GEORGIA: Tybee Island, *Harper* 742.

MISSISSIPPI: Horn Island, *Tracy* 2854 and in 1897.

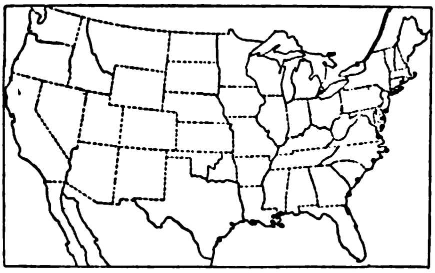


FIG. 86.—Distribution of *P. amarum*.

47. Panicum amarulum sp. nov.

DESCRIPTION.

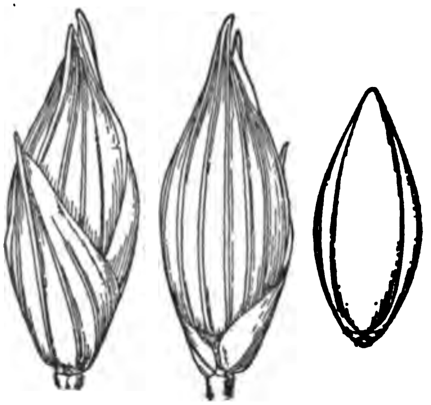


FIG. 87.—*P. amarulum*. From type specimen.

Plants glaucous but less so than in *P. amarum*, glabrous throughout, cespitose in large bunches sometimes as much as a meter across, 1 to 2 meters high; culms simple above the base, stout, sometimes 1 cm. thick; sheaths mostly overlapping; ligules dense, about 3 mm. long; blades erect or ascending, 20 to 50 cm. long, 5 to 12 mm. wide, broadest at the base, more or less involute, pilose at the base on the upper surface; panicles finally exserted, one-third the height of the plant or more, 5 to 10 cm. wide, slightly nodding, compact, densely flowered, the long, fascicled branches erect but more or less spreading at their tips, spikelet-bearing from the base; spikelets short-pediceled, 4.3 to 5.5 mm. long, 1.7 to 2 mm. wide, narrowly ovate, acuminate, strongly nerved; first glume half to two-thirds as long as the spikelet, acuminate, 5 to 7-nerved; second glume slightly longer than the sterile lemma, both 7 to 9-nerved, pointed beyond the fruit; fruit 3 to 3.5 mm. long, about 1.4 mm. wide, narrowly ovate, bluntly pointed.

Type U. S. National Herbarium no. 592748, collected September 24, 1900, Virginia Beach, Va., by T. A. Williams (no. 3090).

This is the species to which the name *P. amarum* was restricted by Scribner and Merrill,[a] Nash,[b] and Hitchcock,[c] when this species and the preceding[d] came to be regarded as distinct.

The name here proposed is an attempt to associate this species with the name it has so long borne, and also refers to the slightly bitter taste of the foliage.

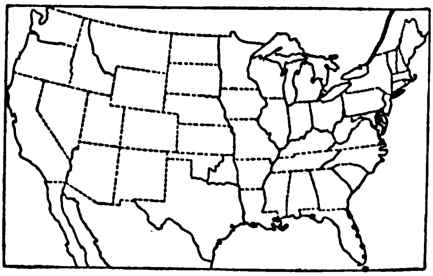


FIG. 88.—Distribution of *P. amarulum*.

DISTRIBUTION.

Sandy seashores and coast dunes, Virginia to Florida and west to Louisiana; also in the Bahamas.

VIRGINIA: Norfolk, *Kearney* 292; Ocean View, *Kearney* 1775, *Vasey* in 1890; Lynn Haven, *Hitchcock* 440; Virginia Beach, *Hitchcock* 168, *Kearney* 2021, 2063, *Mackenzie* 1725, *Williams* 3090.

FLORIDA: Indian River, *Curtiss* 3578; Cape Malabar, *Curtiss* in 1879; Lake Worth Inlet, *Curtiss* 5527; Sea Breeze, *Webber* 465; Miami, *Chase* 3899; Cape Florida,

---

[a] U. S. Dept. Agr. Div. Agrost. Circ. **29**: 5. 1901.

[b] Britton, Man. ed. 2. 1048. 1905.

[c] Gray, Man. ed. 7. 104. 1908.

[d] See note under *P. amarum* Ell. p. 94.

Chase 3953; Key Largo, *Chase* 3935, *Curtiss* in 1884; Upper Metacumbe Key, *Chase* 3915; Santa Rosa Island, *Tracy* 6508; without locality, *Chapman*, *Rugel* 444.

LOUISIANA: Battledore Island, *Tracy & Lloyd* 464.

BAHAMAS: Great Bahama, *Britton & Millspaugh* 2739; New Providence, *Britton & Brace* 307, 493 (all in Field Mus. Herb.).

Tenera.—Perennials; culms slightly compressed, wiry, the internodes much elongated; ligules membranaceous, about 0.5 mm. long; blades linear, at the base narrower than their sheaths; panicles small, narrow, nearly simple; spikelets short-pediceled, glabrous or nearly so; palea of sterile floret a small nerveless scale; fruit elliptic, smooth and shining.

Panicles 3 to 8 cm. long; spikelets 2.2 to 2.8 mm. long, pointed....... 48. *P. tenerum.*
Panicles not over 2 cm. long; spikelets not over 1.6 mm. long, blunt. 49. *P. stenodes.*

48. Panicum tenerum Beyr.

Panicum tenerum Beyr. in Trin. Mém. Acad. St. Pétersb. VI. Sci. Nat. 1: 341. 1834. The citation given is "Georg. Amer. (in paludibus nemorum cresc.) BEYRICH ms." The label accompanying the type specimen in the Trinius Herbarium reads "Panicum tenerum n. sp. Georgia, in paludibus nemorum," and "mis. Beyrich 1834" added in Trinius's writing. A second ticket bears the name "Pan. tenerum Beyr."

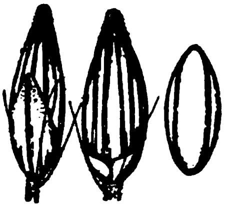


FIG. 89.—*P. tenerum*. From type specimen.

Panicum anceps strictum Chapm. Fl. South. U. S. 573. 1860. "Damp sterile soil, Florida." In the Chapman Herbarium at Biltmore is a specimen labeled "P. anceps strictum from the original locality Apa[lachicola] 1887" and in the Chapman Herbarium in that of Columbia University is a similar specimen labeled "Panicum anceps L. var. strictum, Southern Flora. Florida," with nothing to indicate whether or not it was collected before the date of publication. In the National Herbarium are two more specimens from Chapman also without date. All the specimens belong to *P. tenerum*, hence there is no doubt as to the identity of Chapman's variety, though whether or not the type be in existence can not be determined.

This species was described under the name of *P. stenodes* Griseb. by Vasey,[a] Chapman,[b] Scribner,[c] and Nash.[d]

DESCRIPTION.

Plants in small tufts from a knotted crown, 40 to 90 cm. high, olivaceous; culms erect, stiff and wiry, producing small, solitary panicles from the upper nodes or remaining simple, glabrous; sheaths much shorter than the internodes, the upper glabrous, the lower sparsely to copiously papillose-pubescent toward the summit with soft, spreading or reflexed hairs; blades 4 to 15 cm. long, 2 to 4 mm. wide, (the uppermost much reduced), erect, firm, drying involute at least toward the summit, pilose on the upper surface toward the base, or the lower sometimes on both surfaces; terminal panicles rather short-exserted, 3 to 8 cm. long, rarely over 5 mm. wide, the short, appressed, subracemose branches bearing rather crowded spikelets throughout their length, the pedicels usually with a few long hairs at the summit; spikelets 2.2 to 2.8 mm. long, 0.8 to 1 mm. wide, narrowly ovate, pointed; first glume clasping, half as long as the spikelet or more, 1-nerved, glabrous or obscurely strigose toward the summit; second glume and sterile lemma equal, exceeding the fruit, 5 to 7-nerved, glabrous; fruit 1.7 to 1.8 mm. long, about 0.8 mm. wide.

---

[a] U. S. Dept. Agr. Div. Bot. Bull. 8: 25. 1889.

[b] Fl. South. U. S. ed. 3. 583. 1897.

[c] U. S. Dept. Agr. Div. Agrost. Bull. 7: 64. *f. 46*. 1897; op. cit. (ed. 2) 52. *f. 46*. 1900.

[d] Small, Fl. Southeast. U. S. 92. 1903.

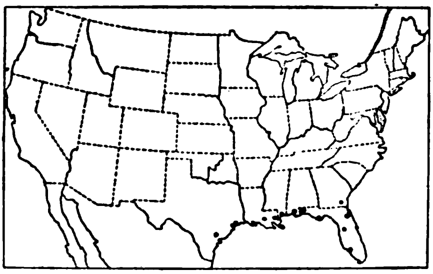


FIG. 90.—Distribution of *P. tenerum*.

DISTRIBUTION.

Margins of swamps and wet places in flatwoods and pine barrens near the coast, Georgia to Florida and west to Texas; also in the Bahamas and Cuba.

GEORGIA: Cobb, *Harper* 1045; Ruskin, *Ricker* 908.

FLORIDA: Jacksonville, *Curtiss* 3579 in part, 4035, 5083; *Kearney* 139; Baldwin, *Combs* 61, *Nash* 2249; De Funiak Springs, *Combs* 476; Apalachicola, *Chapman;* Pensacola, *Combs* 530; Avondale, *Combs* 487; Jupiter, *Curtiss* 5576C; Chipley, *Combs* 574, 619; Grasmere, *Combs* 1112; Tampa, *Garber* in 1877; Braidentown, *Combs* 1266; Myers, *Chase* 4187, *Hitchcock* Lee Co. Pl. 492; without locality, *Chapman*, *Garber* in 1878, *Simpson* in 1889.

ALABAMA: Mobile, *Kearney* 50 in part, *Mohr* in 1884, 1893, and 1894.

MISSISSIPPI: Ocean Springs, *Kearney* 293, *Tracy* 26; Horn Island, *Tracy* in 1898.

LOUISIANA: Without locality, *Hale* (Gray Herb.).

TEXAS: Nona, *Nealley* in 1892; without locality, *Nealley* in 1884.

BAHAMAS: Andros, *Brace* 7019, 7132 (both in Field Mus. Herb.).

CUBA: Pinar del Rio, *Wright* 3870 in part; Herradura, *Hitchcock* 154, *Tracy* 9080.

49. **Panicum stenodes** Griseb.

Panicum stenodes Griseb. Fl. Brit. W. Ind. 547. 1864. "HAB. Jamaica!, *Pd.* [Purdie], in savannahs, Manchester." The type specimen, bearing data as published, is in the Kew Herbarium.

Panicum hians Spruce; Griseb. Fl. Brit. W. Ind. 548. 1864, not Ell. 1816. This name is given as a synonym of *P. stenodes* and credited to "*Pl. Spruce.*" We have not seen Spruce's specimen and the name is here referred to *P. stenodes* on the authority of Grisebach.

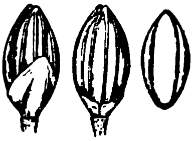


FIG. 91.—*P. stenodes*. From Wright's no. 192 in Grisebach Herbarium.

DESCRIPTION.

Plants in small tufts, 25 to 50 cm. high, glabrous throughout; culms erect or reclining, very slender and wiry, producing from the middle nodes slender branches about equaling the main culm, both this and the branches bearing small, solitary or fascicled panicles from the upper nodes; sheaths very short, about 1 to 2 cm. long; blades 1 to 4 cm. long, 1 to 2 mm. wide, the upper often reduced to mere points, erect, firm, involute; panicles short-exserted, the lateral often partly included, 1 to 2 cm. long, 1 to 2 mm. wide, subracemose; spikelets 1.4 to 1.6 mm. long, about 0.7 mm. wide, elliptic, rather turgid; first glume about half the length of the spikelet, blunt, nerveless or 1-nerved; second glume and sterile lemma equal, scarcely exceeding the fruit, 5-nerved; fruit 1.3 mm. long, 0.6 mm. wide.

This species is distinguished from *P. tenerum* by its more slender culms, numerous branches, and smaller panicles of smaller spikelets.

Panicum caricoides Nees,[a] the type specimen of which, in the Munich Herbarium, was collected by Martius in the province of Para, Brazil, is an allied species. The Martius specimen differs from the West Indian plants in having larger spikelets, 1.8 to 1.9 mm. long, and numerous long, stiff, erect hairs on the pedicels.

DISTRIBUTION.

Borders of ponds and wet savannas, Costa Rica and the West Indies; also in Brazil.

COSTA RICA: Buenos Aires, *Pittier* 10589.

CUBA: Herradura, *Baker & Dimmock* 4837 (Hitchcock Herb.), *Hitchcock* 155; without locality, *Wright* 3871; Hanabana, *Wright* 192 (Grisebach Herb.).

SANTO DOMINGO: *Wright, Parry, & Brummel* 624.

BRAZIL: Prov. of St. Paul, *St. Hilaire* 758 (Paris Herb.); Barra, *Spruce* 1289 (Gray Herb.).

Agrostoidia.—Tufted perennials; culms erect, compressed, sheaths more or less keeled; ligules membranaceous, short, sometimes ciliate; blades long and narrow; spikelets lanceolate, glabrous; first glume keeled, scabrous on the keel toward the apex, the second glume and sterile lemma pointed beyond the fruit, more or less keeled, the spikelet thus often appearing laterally compressed, the palea of the sterile floret about half as long as its lemma; fruit elliptic, smooth and shining, a minute tuft of thickish hairs at the apex.

The first three species of this group have much the appearance of certain species of Agrostis.

Rootstocks present; culms but little compressed; spikelets set obliquely on their appressed pedicels.

Panicles open; spikelets 3.4 to 3.8 mm. long (shorter in exceptional specimens).......................... 55. *P. anceps.*

Panicles more or less contracted; spikelets not over 2.8 mm. long.................................... 56. *P. rhizomatum.*

Rootstocks absent; culms strongly compressed with keeled sheaths; spikelets not obliquely disposed.

Ligules ciliate; basal leaves half as long as the culm or more; panicle much exceeding the upper leaves.

Spikelets not over 2.7 mm., usually 2.5 mm. long, the first glume less than half that length; ligules 2 to 3 mm. long............................ 53. *P. longifolium.*

Spikelets 3 to 3.5 mm. long; first glume two-thirds to three-fourths that length; ligule less than 1 mm. long.................................. 54. *P. combsii.*

Ligules erose or lacerate, not ciliate; basal leaves in short tufts, the upper usually nearly equaling the terminal panicle.

Fruit stipitate; spikelets 2.5 to 2.8 mm. long, conspicuously secund.......................... 52. *P. stipitatum.*

Fruit not stipitate; spikelets not conspicuously secund.

Spikelets 1.8 to 2 mm., in occasional specimens 2.2 mm. long; panicle branches ascending or spreading.......................... 50. *P. agrostoides.*

Spikelets about 2.5 mm. long; panicle branches erect or nearly so...................... 51. *P. condensum.*

---

[a] Nees in Trin. Gram. Pan. 149. 1826; Nees, Agrost. Bras. 108. 1829.

50. **Panicum agrostoides** Spreng.

Panicum agrostoides Spreng. Pl. Pugill. **2**: 4. 1815. Sprengel first gives an original diagnosis, then cites "P. agrostidiforme Lam. ill. n. 895. encycl. 4. 738. Habitare videtur in Cayenna. Misit etiam Mühlenbergius e Pensylvania." Then follows an ample description which applies to the plant bearing the name *Panicum agrostoides* and marked as sent by Muhlenberg which is found in the Willdenow Herbarium. Sprengel's herbarium is not segregated from the general herbarium at Berlin, as is Willdenow's, and no specimen marked *Panicum agrostoides* from Muhlenberg was found in the general herbarium. Sprengel's description was doubtless based on the specimen in the Willdenow Herbarium, which is therefore taken as the type, the citation of Lamarck's name[a] as a synonym being erroneous. It would seem that the name *P. agrostoides* was given by Muhlenberg on the specimen sent to Willdenow, since Muhlenberg shortly after[b] published this as a new species of his own.[c] In the Muhlenberg Herbarium specimens of both this species and of *P. stipitatum* are found in the cover marked "Panicum agrostoides M."

Panicum rigidulum Bosc; Spreng. Syst. Veg. **1**: 320. 1825. This is given as a synonym of *P. anceps* Michx. and is based on P. "rigidulum Bosc. (W. herb.)." The specimen in the Willdenow Herbarium is *P. agrostoides*. *Panicum rigidulum* was described by Nees[d] as a new species with Bosc as the author, and based on the specimen in the Willdenow Herbarium.

Agrostis polystachya Bosc; Steud. Nom. Bot. ed. 2. **1**: 40. 1840. This is given as a synonym of *A. composita* Poir. No locality is cited. A specimen in the De Candolle Herbarium, collected in Carolina by Bosc, is referable to *P. agrostoides*. In the Delessert Herbarium are two specimens labeled by Bosc as *Agrostis polystachya;* one is *Panicum anceps* and the other is *P. virgatum*.

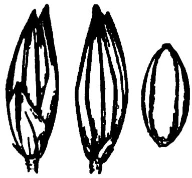


FIG. 92.—*P. agrostoides*. From type specimen in Willdenow Herbarium.

Panicum elongatum ramosior[ius] Mohr, Contr. Nat. Herb. **6**: 357. 1901. "ALABAMA: Damp cultivated ground. Mobile County, Pierce's Landing." The type specimen, in the Mohr Herbarium, collected by "C. Mohr, Oct. 1885," is a portion of a plant with an unusually large and open panicle.

This species was described by Nash[e] under the name of *P. agrostidiforme* Lam.

DESCRIPTION.

Plants in dense clumps, from a short caudex, with numerous shoots of short leaves at the base, erect, glabrous throughout except as noted, 50 cm. to 1 meter or more high; culms rather stout, compressed; sheaths longer than the internodes, keeled, occasionally pilose on the sides at the juncture with the blade; ligules erose, about 1 mm. long; blades erect, conduplicate at the base, but flat above or sometimes drying involute, 20 to 50 cm. long, rarely longer, 5 to 12 mm. wide; panicles terminal and axillary, finally long-exserted, 10 to 30 cm. long, rarely longer, usually half to two-thirds as wide but occasionally diffuse and nearly as wide as long, the stiff branches ascending or sometimes spreading at maturity, with more or less divergent, densely flowered branchlets, commonly from the lower side, the ultimate branchlets and short pedicles appressed, scabrous, the latter usually bearing at the summit one to several delicate white hairs, these often one-fourth to one-third as long as the spikelet; spikelets 1.8 to 2 mm. long, in occasional specimens 2.2 mm. long, 0.7 to 0.8 mm. wide; first glume hardly half the length of the spikelet; second glume and sterile lemma subequal, 5-nerved, the midnerves scabrous at the summit; fruit 1.3 mm. long, 0.6 mm. wide.

---

[a] *Panicum agrostidiforme* Lam., the type of which is in the Lamarck Herbarium, is *P. laxum* Swartz.

[b] Descr. Gram. 119. 1817.

[c] Sprengel does not include his *P. agrostoides* in the Systema [Syst. Veg. **1**: 319. 1825] but gives *P. agrostoides* Muhl. as a synonym of *P. proliferum*.

[d] Agrost. Bras. 163. 1829.

[e] Britt. & Brown, Illust. Fl. **1**: 115. *f. 249*. 1896.

This widely distributed species is variable in the form of the panicle, occasional specimens approaching *P. condensum* and others *P. stipitatum*. The Muhlenberg specimens in the Willdenow and Muhlenberg herbaria are the characteristic form described above.

The following specimens have rather turgid spikelets 2 to 2.2 mm. long, more or less crowded on the ascending but not appressed branches and appear to be intermediate between *P. agrostoides* and *P. condensum*. These are not cited in the distribution given below. MAINE: North Berwick, *Parlin* 751; MASSACHUSETTS: Newburyport, *Conant;* NEW YORK: Erastina, *Pollard* in 1894; VIRGINIA: *Boettcher* 462; GEORGIA: Leslie, *Harper* 1730; FLORIDA: Jacksonville, *Curtiss* 5302; Bartow, *Combs* 1207; LOUISIANA: Lake Charles, *Chase* 4410; TEXAS: Dallas, *Reverchon* 1083A; Hempstead, *Hall* 819; without locality, *Reverchon* 103 in 1879.

In the following specimens the spikelets are more or less secund on the branchlets, giving the panicles much the aspect of those of *P. stipitatum*, but the spikelets are 2 mm. long or scarcely more: *Bartlett* 1066, *Chase* 4397, *Curtiss* 6890, *Harper* 1239, *Plank* 24, *Riggs*, Marshall, Texas.

Unusually loosely flowered, open-panicled specimens, such as that named *P. elongatum* var. *ramosius*, are the following: *Chapman*, Georgia, *Curtiss* 6888, *Mohr* in 1885, *Plank* 75, *Winchell*, Alabama.

DISTRIBUTION.

Wet meadows and shores, Maine to Illinois and Kansas, south to Florida and Texas; also on Vancouver Island and in California.

MAINE: Orono, *Harvey* 1240; North Berwick, *Parlin* in 1896 (Gray Herb.).

MASSACHUSETTS: Without locality, *Conant;* Middlesex Fells, *Knowlton* 910 (Hitchcock Herb.).

CONNECTICUT: South Manchester, *Hitchcock* 129; Huntington, *Eames* in 1895; Southington, *Bissell* 5529.

RHODE ISLAND: Cumberland, *Greenman* 1804 (Gray Herb.).

NEW YORK: Cleveland, *Rowlee* in 1906.

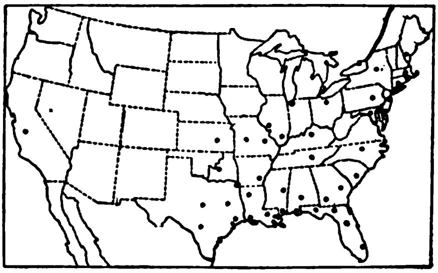


FIG. 93.—Distribution of *P. agrostoides*.

NEW JERSEY: Mount Arlington, *Mackenzie* 2355; Stockholm, *Van Sickle* in 1895; Atsion, *Chase* 3529; Monmouth Junction, *Pearce* in 1884.

PENNSYLVANIA: Chambersburg, *Porter* in 1897; Tinicum, *Smith* 158; Westchester, *Darlington;* without locality, *McMinn*.

OHIO: Sandusky, *Kellerman* in 1902 (Univ. Ohio Herb.).

INDIANA: Miller, *Umbach* in 1896 (Field Mus. Herb.).

ILLINOIS: Madison, *Eggert* 227; St. Clair County, *Brendel* in 1850; southern Illinois, *Vasey* in 1860.

MISSOURI: Lake City, *Mackenzie* 301; Sibley, *Bush* 302; Monteer, *Bush* 5115 in part; Lees Summit, *Bush* 5234; Dunklin County, *Bush* 9.

KANSAS: Cherokee County, *Hitchcock* Pl. Kan. 877; Kingman County, *Carleton* 548.

DELAWARE: Townsend, *Canby* in 1891; Talleyville, *Commons* in 1897.

MARYLAND: Lanham, *Chase* 3469, *Hitchcock* 2398; Glen Echo, *Kearney* in 1895; Great Falls, *Ball* 83.

NORTH CAROLINA: Chapel Hill, *Coker* in 1908.

SOUTH CAROLINA: Aiken, *Ravenel* in 1869; Orangeburg, *Hitchcock* 445.

GEORGIA: Thomson, *Bartlett* 1066; Leesburg, *Curtiss* 6888, 6890; Arlington, *Harper* 1239; Augusta, *Cuthbert* 1128; without locality, *Chapman.*

FLORIDA: Old Town, *Combs* 879; Dunnellon, *Combs* 915; Lake City, *Chase* 4286, 4287; Eustis, *Nash* 1694; Grasmere, *Combs* 1120; Clarcona, *Meislahn* 100, 159a; Orange County, *Baker* 131; Crystal, *Combs* 1012; Homosassa, *Combs* 961; Bartow, *Combs* 1198, 1204; Ellzey, *Combs* 804; Jenkins, *Eaton* 242; Miami, *Eaton* 164 in part, 165; without locality, *Rugel* in 1842.

KENTUCKY: Lexington, *Short* in 1835 (Gray Herb.).

TENNESSEE: Knoxville, *Ruth* 65.

ALABAMA: Eufaula, *McCarthy* in 1888; Cullman County, *Eggert* in 1897; Mobile County, *Mohr* in 1885; without locality, *Chapman, Winchell.*

MISSISSIPPI: Starkville, *Chase* 4445, *Kearney* 74; Nicholson, *Kearney* 372 in part; Panola County, *Eggert* in 1896; Horn Island, *Tracy* 2036.

ARKANSAS: Fulton, *Bush* 1023; Texarkana, *Heller* 4235.

LOUISIANA: Coushatta County, *Ball* 124; Alexandria, *Ball* 169; Rayville, *Ball* 20 in part; Natchitoches, *Ball* 156; Oberlin, *Ball* 225; Chalmette, *Tracy* 7651; Shreveport, *Ball* 111; Pointe a la Hache, *Langlois* in 1880; Lake Charles, *Chase* 4397.

TEXAS: Texarkana, *Plank* 24; Beaumont, *Plank* 24; Jacksonville, *Joor* in 1884; Rusk, *Plank* 75; Marshall County, *Riggs* 18; Columbia, *Bush* 1398; Harvester, *Thurow* in 1898; Hockley, *Thurow* in 1889; Tyler, *Reverchon* 2222; Luling, *Plank* 22; "60 miles south of Fort Scott," *Palmer* in 1863.

OKLAHOMA: Poteau, *Hitchcock* in 1903 (Hitchcock Herb.); without locality, *Sheldon* in 1891.

BRITISH COLUMBIA: Sproat Lake, Vancouver Island, *Macoun* 135, 29348.[a]

CALIFORNIA: On the Sacramento, *Wilkes* Expl. Exped.[b]

51. Panicum condensum Nash.

Agrostis purpurascens Bert.; Steud. Nom. Bot. ed. 2. **1**: 42. 1840, not Swartz, 1788. "Domingo" is cited, but no description is given. Bertero's specimen, labeled "Agrostis purpurascens loc. aquosis. S. Domingue Bertero. M. Balbis 1821," in the Berlin Herbarium, is *P. condensum.*

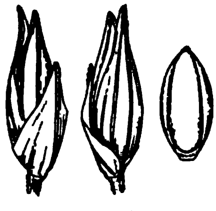


FIG. 94.—*P. condensum.* From type specimen.

Panicum contractum Trin.; Steud. Nom. Bot. ed. 2. **2**: 254. 1841. "Trin. mpt. Guadal. Domingo" is cited, but no description is given. The specimen in the Berlin Herbarium, bearing this name in Trinius's writing and labeled "S. Domingo, locis aquosis. Balbis misit 1824," is *P. condensum.*

Panicum condensum Nash in Small, Fl. Southeast. U. S. 93. 1903. On page 1327 in the list of new genera and species the following citation is given: "Type, *Curtiss*, Second Distr. Pl. So. U. S., no. 5576, in Herb. C. U." The type, in Columbia University Herbarium, is a single plant lacking the base. Curtiss's no. 5576 was collected October 16, 1895, near Jacksonville, Fla.

---

[a] These were collected on the same date, but have been distributed under two numbers.

[b] Thurber [Torr. Bot. Wilkes Expl. Exped. **1**: 480. 1874] calls attention to the fact that this collection was far out of the known range of *P. agrostoides.*

DESCRIPTION.

Plants like *P. agrostoides* in habit, culms on the average rather taller, sometimes geniculate at base; sheaths appressed-pubescent along the sides toward the summit or glabrous; blades often sparsely pilose on the upper surface at the conduplicate base; panicles terminal and axillary, 10 to 25 cm. long, rarely over 5 cm. wide, the long, solitary or fascicled branches erect, naked at the base, with appressed branchlets bearing crowded spikelets on short, scabrous, but not pilose pedicels, or these occasionally with one or two erect hairs; spikelets 2.2 to 2.5 mm. long, about 0.8 mm. wide, turgid; first glume slightly more than half the length of the spikelet, acuminate; second glume slightly longer than the sterile lemma, both acuminate, the tips slightly spreading, scabrous on the midnerves toward the apex; fruit 1.4 to 1.5 mm. long, about 0.7 mm. wide.

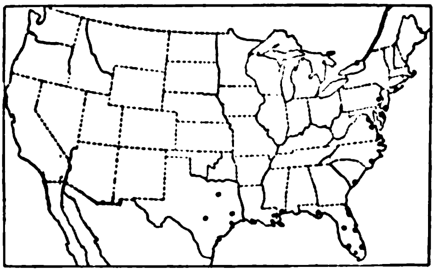


FIG. 95.—Distribution of *P. condensum*.

This species is closely related to *P. agrostoides*, from which it is distinguished by the condensed panicle of slightly larger spikelets. In occasional specimens, as *Combs* 964½, 973, *Hitchcock* 174, and *Meislahn* 159, the panicle branches are ascending, the panicle not contracted, thus approaching *P. agrostoides*.

DISTRIBUTION.

[illegible]

Borders of streams and ponds and in wet places, Pennsylvania to Florida and west to Texas, mostly near the coast; also in the West Indies.

New Jersey: Cape May County, *Van Pelt* in 1909 (Acad. Phil. Herb.).
Pennsylvania: Chambersburg, *Porter* in 1897.
Delaware: Smyrna, *Long* in 1908 (Acad. Phil. Herb.).
District of Columbia: *Steele* in 1896.
Virginia: Brick Haven, *Steele* in 1896; Four-Mile Run, *Chase* 2673; Virginia Beach, *Hitchcock* 174.
North Carolina: Wilmington, *Hitchcock* 444.
South Carolina: Isle of Palms, *Chase* 4527.
Florida: Jacksonville, *Curtiss* 5298, 5576, 5576A; Titusville, *Chase* 4014; Orange County, *Baker* 18, *Combs* 1144; Clarcona, *Meislahn* 159; Homosassa, *Combs* 957, 964½, 973; Crystal, *Combs* 1011; Jensen, *Hitchcock* 747; Miami, *Hitchcock* 172, 695, 699; Braidentown, *Simpson* 7093; St. Vincents Island, *Chapman*, *Tracy* 6444.
Mississippi: Horn Island, *Tracy* in 1893 (Hitchcock Herb.).
Texas: Dallas County, *Reverchon* 2368; Waller County, *Thurow* in 1898; without locality, *Lindheimer* 728.
Bahamas: Nassau, *Curtiss* W. Ind. Pl. 174.
Cuba: Without locality, *Wright* 3862 in part.
Grand Cayman: *Hitchcock* in 1891 (Mo. Bot. Gard. Herb.).
Leeward Islands: Guadeloupe, *Duss* 3919.

52. **Panicum stipitatum** Nash.

Panicum elongatum Pursh, Fl. Amer. Sept. **1**: 69. 1814, not Salisb. 1796. "New Jersey to Virginia." Among the Pursh plants in Kew Herbarium are two sheets labeled "Panicum elongatum Pursh. Fl: Amer.," on one of which is a robust specimen and a ticket bearing an unpublished herbarium name, and also the name "elongatum" and the word "Delaware." This is taken as the type. On the second sheet are two slender specimens, one of this species and the other of *P. agrostoides*.

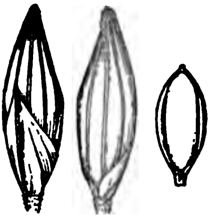


FIG. 96.—*P. stipitatum.* From Common's no. 305.

Panicum agrostoides elongatum Scribn. Tenn. Agr. Exp. Sta. Bull. **7**: 42. *pl. 9. f. 34*. 1894. Based on *P. elongatum* Pursh.

Panicum stipitatum Nash in Scribn. U. S. Dept. Agr. Div. Agrost. Bull. **17** (ed. 2): 56. *f. 352*. May 22, 1901. Based on *P. elongatum* Pursh, 1814, not Salisb. 1796. "Nash, in Britt. Manual, 83, 1901," is here cited as the place of publication, but this must have been taken from proof sheets, since the Manual was not published until after August 24, 1901, that being the date given after the preface.

DESCRIPTION.

Plants like *P. agrostoides* in habit, often purple-tinged throughout; culms on the average stouter, strongly compressed; sheaths much overlapping, blades usually equaling or exceeding the terminal panicles, often scabrous on the lower surface; panicles usually several to a culm, sometimes as many as five axillary panicles, commonly dark purple, short-exserted, 10 to 20 cm. long, one-third to half as wide, densely flowered, the numerous stiff branches ascending, with numerous divaricate branchlets mostly from the lower side and beginning at the base, bearing crowded, subsecund spikelets, the short, scabrous pedicels only rarely with one or two erect hairs; spikelets 2.5 to 2.8 mm. long, about 0.7 mm. wide, often curved at the point; first glume about half the length of the spikelet; second glume and sterile lemma subequal, scabrous on the midnerve at the acuminate apex; fruit about 1.5 mm. long, about 0.6 mm. wide, short-stipitate.

Typical specimens of this species are characteristic and readily distinguished from *P. agrostoides*, but less densely panicled forms, with smaller spikelets approach that species. Such are the following: *Bush* 3658, *Chase* 4497, *Cocks* 3008. In these specimens the fruit is stipitate, for which reason they are referred to this species.

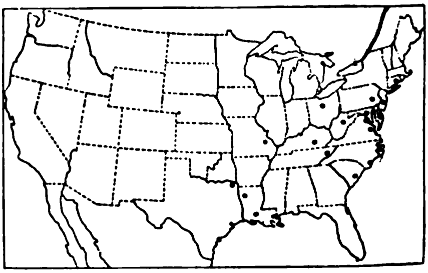


FIG. 97.—Distribution of *P. stipitatum*.

DISTRIBUTION.

Moist soil, Connecticut to South Carolina, west to Kentucky, Missouri, and Texas.

CONNECTICUT: Lyme, *Graves* 236.
NEW JERSEY: Camden, *Scribner* 39 in part; Oradell, *Mackenzie* 1893.
PENNSYLVANIA: Chambersburg, *Porter* in 1897; Westchester, *Darlington* in 1827.
OHIO: Lancaster, *Kellerman* 6800.
MISSOURI: Williamsville, *Bush* 3658.
DELAWARE: Greenbank, *Commons* 25 and 305 in 1884.
MARYLAND: Hyattsville, *House* 1443.

DISTRICT OF COLUMBIA: *Greene* in 1908, *Steele*, *Vasey*.

VIRGINIA: Four-Mile Run, *Chase* 2679; Goshen, *Steele* in 1904.

WEST VIRGINIA: Grafton, *Guttenberg* in 1879, *Smith* in 1879.

NORTH CAROLINA: Newbern, *Kearney* 2249; eastern North Carolina, *McCarthy* in 1885; Henderson County, *Smith* in 1881.

SOUTH CAROLINA: Aiken, *Ravenel* in 1869; Isle of Palms, *Hitchcock* 225.

KENTUCKY: Bell County, *Kearney* 380;[a] Harlan County, *Kearney* 380.[a]

TENNESSEE: Hollow Rock, *Biltmore Herb.* 808a, *Eggert* in 1897; Cocke County, *Kearney* 969; Madison County, *Bain* in 1892.

ALABAMA: Scottsboro, *Chase* 4497.

LOUISIANA: Calhoun, *Ball* 70; Calcasieu, *Cocks* 3008.

TEXAS: Texarkana, *Plank* 77.

53. Panicum longifolium Torr.

Panicum longifolium Torr. Fl. North. & Mid. U. S. 149. 1824. "In the pine barrens of New Jersey. * * * For specimens * * * I am indebted to *Mr. James Goldy*." The type, in the Columbia University Herbarium, is a small specimen 35 cm. high, with an open, few-flowered panicle.

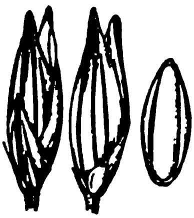


FIG. 98.—*P. longifolium*. From type specimen.

Panicum anceps pubescens Vasey, U. S. Dept. Agr. Div. Bot. Bull. **8**: 37. 1889. "Mobile, Ala. (Dr. Mohr)." There is no specimen in the National Herbarium marked with this name in Vasey's writing, but there are two duplicate specimens of *P. longifolium* with pubescent sheaths and blades, collected by Dr. Charles Mohr, Mobile, Alabama, both labeled *Panicum anceps* and bearing an unpublished varietal name in Vasey's writing. These agree with Vasey's brief description and are doubtless the basis of this name. Vasey applied this unpublished varietal name also to specimens of *P. anceps* and to one of *P. rhizomatum*, but Dr. Mohr's, being the only specimen cited, is taken as the type.

Panicum pseudanceps Nash, Bull. Torrey Club **25**: 85. 1898. "Collected by Mr. J. H. Simpson in Florida in 1889." The type, in Nash's herbarium, consists of two plants 58 and 60 cm. high, the panicles less open than those of the Goldy specimen mentioned above.

DESCRIPTION.

Plants in dense tufts, 35 to 80 cm. high, usually surrounded by basal leaves nearly half as long as the culm; culms rather slender, much compressed, stiff, glabrous; sheaths mostly shorter than the internodes except at the base, keeled, usually hairy on the sides at the juncture with the blade, otherwise glabrous or villous toward the summit, sometimes densely so; ligules fimbriate-ciliate, 2 to 3 mm. long, the ciliæ usually at the sides only, not meeting at the back; blades erect or sometimes recurved or tortuous, conduplicate at base, flat above or somewhat involute, 8 to 40 cm. long, 2 to 5 mm. wide, pilose on the upper surface toward the base, sometimes also on the lower surface; lateral panicles few or none; terminal panicles finally long-exserted, much exceeding the leaves, 10 to 25 cm. long, usually half to two-thirds as wide, but sometimes rather contracted, the distant, slender branches solitary or fascicled, ascending, usually naked at base, bearing short, appressed, rather closely flowered branchlets, these and the pedicels scabrous, the latter sometimes with a few hairs at the summit; spikelets 2.4 to 2.7 mm. long, about 0.7 mm. wide; first glume two-fifths to scarcely half the length of the spikelet, acute; second glume slightly longer than the sterile lemma, both keeled, usually spreading at the tip, scabrous on the midnerve at the apex; fruit 1.6 mm. long, 0.6 mm. wide.

---

[a] These two collections were distributed under the same number.

A specimen from Nicholson, Mississippi, *Kearney* 380, with spreading panicle branches and spikelets only 2 mm. long is doubtfully referred here.

DISTRIBUTION.

P9.

Moist sandy ground, Rhode Island and Connecticut to Florida and west to Texas, mostly near the coast.

Connecticut: Groton, *Bissell* 11596, *Graves* 248, 256.
Rhode Island: Shannock, *Moore* in 1896.
New York: New York, *Bicknell* in 1896; Long Island, *Miller* in 1873 (both in Hitchcock Herb.).
New Jersey: Atsion, *Chase* 3530; without locality, *Holmes* in 1890.
Pennsylvania: Philadelphia, *Saunders* in 1898, *Smith*.
Delaware: Ellendale, *Commons* 224, 343, 344.
Maryland: Berlin, *Novik* 421.
District of Columbia: *Kearney* in 1897, *Steele* in 1897 and 1898.
Virginia: Cape Henry, *Hitchcock* 446; Dismal Swamp, *Chase* 3662; Virginia Beach, *Kearney* 2025.
North Carolina: Newbern, *Kearney* 2242; Wilmington, *Biltmore Herb.* 3627, *Chase* 4564, *Hitchcock* 447; eastern North Carolina, *Ashe;* West Raleigh, *Stanton* 1270; middle North Carolina, *Ashe*.
Florida: Jacksonville, *Curtiss* 5576B; Milton, *Chase* 4318; Bayhead, *Combs* 644; Chipley, *Combs* 571; Gainesville, *Chase* 4225; Crystal, *Combs* 1010; Grasmere, *Combs* 1154, 1168; Bartow, *Combs* 1180½, 1235.
Alabama: Tuskegee, *Carver* 100, Cullman, *Eggert* in 1897, *Mohr* in 1886; Mobile, *Mohr*.
Mississippi: Biloxi, *Chase* 4346, *Kearney* 220, *Tracy* 3627, 3860, 6507a; Fontainbleau, *Tracy* 3858, 3859; Ship Island, *Tracy* 4563; Waynesboro, *Kearney* 116.
Louisiana: Without locality, *Hale* (Gray Herb.).
Texas: Jefferson, *Plank* 31; without locality, *Nealley* in 1885, *Wright*.

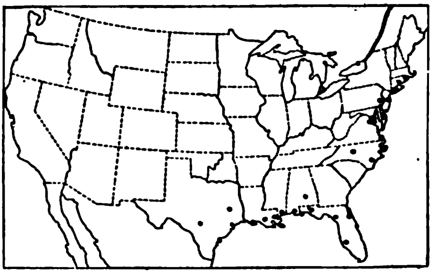


FIG. 99.—Distribution of *P. longifolium*.

54. **Panicum combsii** Scribn. & Ball.

Panicum combsii Scribn. & Ball, U. S. Dept. Agr. Div. Agrost. Bull. **24**: 42. *f. 16.* 1901. "Type collected by Robert Combs, No. 583, for whom the species is named, in damp, fertile flat woods at Chipley, Washington County, Florida, August 20, 1898." The type specimen, in the National Herbarium, is a tuft of several culms with mature panicles.

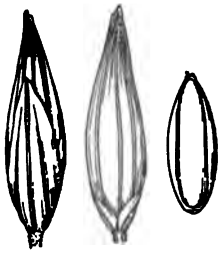


FIG. 100.—*P. combsii*. From type specimen.

DESCRIPTION.

Plants like *P. longifolium* in habit; leaves somewhat more clustered at base; sheaths glabrous or pubescent along the margin toward the summit; ligules less than 1 mm. long, sometimes a few longer hairs at the margin; blades averaging shorter, rarely 25 cm. long, glabrous or pilose on the upper surface at the base, usually sparsely so; lateral panicles wanting or but one or two, terminal panicles 12 to 20 cm. long, two-thirds to three-fourths as wide, few-flowered, the slender, scattered branches ascending;

spikelets 3 to 3.5 mm. long, 0.7 to 0.8 mm. wide, acuminate; first glume two-thirds to three-fourths the length of the spikelet; second glume and sterile lemma subequal, usually scabrous on the midnerve, much exceeding the fruit; fruit 1.8 to 2 mm. long, 0.6 to 0.8 mm. wide.

This species is closely related to *P. longifolium* from which it may be distinguished by its shorter blades, longer spikelets, and usually by the lack of pubescence.

DISTRIBUTION.

Margins of ponds and wet woods, Georgia to Florida, and west to Louisiana.

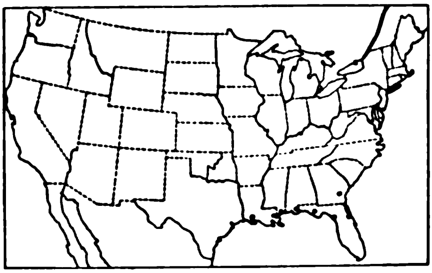


FIG. 101.—Distribution of *P. combsii.*

GEORGIA: Tifton, *Harper* 1679; Douglas, *Harper* 2014, Huntington, *Harper* 1081.
FLORIDA: Pensacola, *Curtiss* 6919; Argyle, *Curtiss* 6925A; Chipley, *Combs* 583; without locality, *Chapman.*
ALABAMA: Gateswood, *Tracy* 8408.
MISSISSIPPI: Biloxi, *Tracy* 4568 in part.
LOUISIANA: Lake Charles, *Chase* 4434.

55. Panicum anceps Michx.

Panicum anceps Michx. Fl. Bor. Amer. **1**: 48. 1803. "HAB. in Carolinae herbosis humidis sylvaticis." The type specimen, labeled "Panicum anceps, Hab. in herbosis humidis Carolinae, Virginiae, Georgiae," is in the Michaux Herbarium.

Panicum rostratum Muhl.; Willd. Enum. Pl. 1032. 1809. "*Habitat in sylvaticis humidis* Pensylvaniae, Carolinae." The type specimen, in the Willdenow Herbarium, is marked "P. rostratum Am. Boreal. Muhlenberg." Muhlenberg later[a] published *P. rostratum* as a new species. The specimen in the Muhlenberg Herbarium is the same species as the one sent to Willdenow.

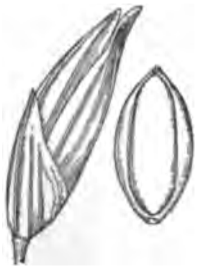


FIG. 102.—*P. anceps.* From type specimen.

Agrostis nutans Poir. in Lam. Encycl. Suppl. **1**: 255. 1810. "Cette plante a été recueillie dans la Caroline, par M. Bosc." We have not seen this specimen, but the description applies well to *P. anceps,* to which species Poiret later[b] refers his *A. nutans.*

Panicum nutans Desv. Opusc. 93. 1831. Based on "Agrostis nutans Poir. Enc. suppl."

Panicum anceps angusta[*um*] Vasey, U. S. Dept. Agr. Div. Bot. Bull. **8**: 37. 1889. "Texas (G. C. Nealley)." The type specimen, in the National Herbarium, is a tall plant with an immature panicle, the long blades involute.

Panicum anceps densiflorum Vasey, U. S. Dept. Agr. Div. Bot. Bull. **8**: 37. 1889. "Texas (J. F. Riggs)." The type specimen, in the National Herbarium, was collected November, 1884, Marshall, Texas, by J. F. Riggs, no. 91. It consists of the upper portions of two robust plants, the panicle branches densely flowered.

DESCRIPTION.

Plants in tufts of few to many culms, 50 cm. to 1 meter or more high, with numerous stout, scaly rootstocks; culms usually robust, not strongly compressed, glabrous; sheaths usually shorter than the internodes, glabrous to densely papillose-pilose, especially at the summit; ligules membranaceous, less than 1 mm. long; blades erect, flat or but slightly conduplicate at base, 20 to 50 cm. long, 4 to 12 mm. wide, pilose and usually ciliate on the upper surface toward the base, otherwise glabrous, scabrous or more or less pubescent on the upper and occasionally on the under surface; panicles terminal only, or narrow, long-peduncled panicles produced from the upper sheaths, the terminal ones finally long-exserted but often nearly equaled by the long blades, 15 to 40 cm. long, usually half to two-thirds as wide (or occasionally narrow), the long, slender, remote, branches somewhat spreading, bearing short, mostly appressed, distant or approximate branchlets with rather crowded, somewhat curved, subsecund spikelets set obliquely on their short, appressed, scabrous pedicels, the first glume toward the main axis, the axes and branches scabrous, usually a few hairs in the axils; spikelets 3.4 to 3.8 mm. long, 1 to 1.2 mm. wide (occasional specimens with smaller spikelets); first glume one-third to half the length of the spikelet, acute; second glume and sterile lemma subequal, forming a beak beyond the fruit, the tips open at maturity; fruit 2 to 2.2 mm. long, about 1 mm. wide.

---

[a] Descr. Gram. 121. 1817.

[b] In Lam. Encycl. Suppl. **5**: 539. 1817.

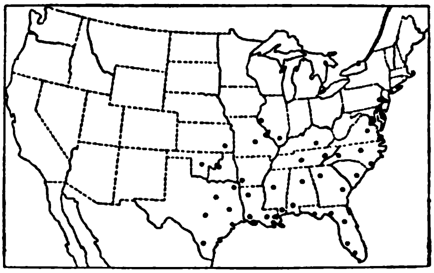


FIG. 103.—Distribution of *P. anceps*.

This species is variable in the pubescence on sheaths and blades and somewhat so in the panicle. The short secondary branchlets may be distant, giving the long branches the appearance of interrupted racemes, or approximate, producing densely flowered branches as in Vasey's variety *densiflorum*.

A comparatively few specimens occur with spikelets only 3 to 3.2 mm. long. Such are the following, which, being nearly glabrous plants with open panicles, are referred here, though in the smaller spikelets they approach the next species: *Ball* 228, *Chase* 4201, 4393, 4554, *Cocks* 3001, *Combs* 717, 878, 1398, *Kearney* 376, *Mohr* in 1885, *Tracy* 4620, 8414.

DISTRIBUTION.

Moist sandy soil, New Jersey to Florida and west to Kansas and Texas.

NEW JERSEY: Stockton, *Fisher* in 1897.

PENNSYLVANIA: Philadelphia, *Smith*; Lancaster, *Porter* in 1861.

ILLINOIS: Oquawka, *Patterson*; Mount Carmel, *Waite* in 1887.

MISSOURI: Monteer, *Bush* 5114; St. Louis, *Eggert* in 1886.

KANSAS: Cherokee County, *Hitchcock* Pl. Kan. 876.

DELAWARE: Carpenter Station, *Commons* 225; Greenbank, *Commons* 303.

MARYLAND: West Chevy Chase, *Chase* 2585; Cabin John, *Steele* in 1896.

DISTRICT OF COLUMBIA: *Blanchard* in 1891, *Chase* 2996, *House* 257, *Kearney* 16, *Vasey* in 1874, *Ward* in 1878.

VIRGINIA: Fairfax County, *Chase* 3631; Arlington, *Dewey* 53; Norfolk, *Kearney* 1748; Virginia Beach, *Britton* in 1895, *Hitchcock* 228.

NORTH CAROLINA: Madison County, *Biltmore Herb.* 5839b; West Raleigh, *Coit* 1301, *Stanton* 1282; Dunns Mountain, *Small* in 1894; eastern North Carolina, *McCarthy* in 1885; Wilmington, *Kearney* 274.

SOUTH CAROLINA: Aiken, *Ravenel* in 1869; Orangeburg, *Hitchcock* 448, 449; Isle of Palms, *Chase* 4554.

GEORGIA: Thomson, *Bartlett* 903; Whitfield County, *Harper* 369; Stone Mountain, *Hitchcock* 230; Leesburg, *Curtiss* 6887; Augusta, *Cuthbert* in 1904.

FLORIDA: Madison, *Combs* 282; Quincy, *Combs* 415; Tallahassee, *Combs* 381, *Kearney* 87, *Nash* 2529; De Funiak Springs, *Combs* 470; Chattahoochee, *Cur-*

tiss 5936; Apalachicola, *Biltmore Herb.* Dist. Dupl. Chapman 696b; Monticello, *Combs* 320; Homosassa, *Combs* 935, 972; Lake City, *Chase* 4284; Crystal, *Combs* 1021; Gainesville, *Chase* 4201, *Combs* 717; Old Town, *Combs* 878; Chipley, *Combs* 560, 586; Grasmere, *Combs* 1073; Orange Bend, *Chase* 4095; Bartow, *Combs* 1206; Tampa, *Combs* 1398; Fort Lauderdale, *Eaton* 341; without locality, *Chapman*.

Kentucky: Bell County, *Kearney* 372 in part.

Tennessee: Bristol, *Hitchcock* 229; Lavergne, *Biltmore Herb.* 696a; Knoxville, *Ruth* in 1895 and 1898; Cocke County, *Kearney* 965; Grainger County, *Smith* in 1880.

Alabama: Auburn, *Tracy* in 1897; Birmingham, *McCarthy* in 1888; Gadsden, *McCarthy* in 1888; Nesheka, *Carver* 7; Cullman, *Mohr* in 1885.

Mississippi: Nicholson, *Kearney* 376; Taylorville, *Tracy* 8414; Waynesboro, *Pollard* 1228; Tupelo, *Tracy* 1535; Starkville, *Chase* 4464, *Kearney* 20 in part; Biloxi, *Tracy* 4620 and in 1893; Bay St. Louis, *Langlois* in 1883; Pass Christian, *Langlois* in 1882.

Arkansas: Benton County, *Plank* 65; Miller County, *Eggert* in 1896; *Harvey* in 1880,

Louisiana: Natchitoches, *Ball* 166; Rayville, *Ball* 8; Coushatta County, *Ball* 125; Calhoun, *Ball* 46; Oberlin, *Ball* 228; West Carroll Parish, *Moseley* in 1903; Lake Charles, *Chase* 4393; Calcasieu, *Cocks* 3001.

Texas: Texarkana, *Heller* 4082, *Plank* 80; Columbia, *Bush* 1298; Rusk, *Plank* 76; Beaumont, *Plank* 25; Marshall, *Riggs* 91; Waller, *Thurow* in 1898; Ennis, *Smith* in 1897; Industry, *Wurzlow* in 1894; without locality, *Nealley* in 1887; *Reverchon* 106.

Oklahoma: On the False Washita, *Palmer* 380 in 1868; Kingfisher County, *Carleton* in 1891; Choctaw Agency, *Bigelow* in 1853–4.

56. Panicum rhizomatum sp. nov.

DESCRIPTION.

Plants like *P. anceps* in habit; the culms less robust, the scaly rhizomes slender and more numerous; leaves more or less clustered toward the base, the sheaths, except the lowermost, shorter than the internodes, densely to sparsely villous along the margin and toward the summit, a dense ring of pubescence at the juncture with the blade; ligules nearly obsolete; blades erect or the lower commonly spreading, 10 to 40 cm. long (usually not over 30 cm.), 5 to 10 mm. wide, pubescent on both surfaces or sometimes glabrous except on the upper surface toward the base; terminal panicles long-exserted, the usually numerous smaller axillary ones short-peduncled or partially included, 10 to 25 cm. long, usually less than one-third as wide, more or less contracted and densely flowered, rather more compound than in *P. anceps*, the distant primary branches ascending, bearing numerous branchlets 1 to 3 cm. long, these with appressed, short, approximate branchlets, with crowded spikelets set obliquely on their short, appressed pedicles as in *P. anceps*, but hardly at all secund; spikelets 2.4 to 2.8 mm. long, about 1 mm. wide; first glume one-third to scarcely half as long as the spikelet, acute; second glume and sterile lemma subequal, beaked as in *P. anceps* but less strongly so, but little exceeding the fruit; fruit 1.9 mm. long, 0.9 mm. wide.

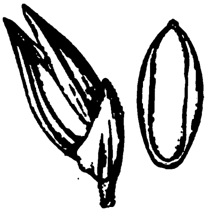


Fig. 104.—*P. rhizomatum.* From type specimen.

Type U. S. National Herbarium no. 592752, collected August 18, 1905, Orangeburg, S. C., by A. S. Hitchcock (no. 450).

This species was referred by Scribner in the herbarium to *P. anceps pubescens* Vasey and was distributed under this name by Nash and others. It is distinguished from *P. anceps* by the somewhat contracted, more densely flowered panicles of smaller spikelets and by the shorter leaves more or less crowded at the base. In occasional specimens the panicle is rather open but less so than in *P. anceps;* but the following three specimens, having all the other characters of *P. rhizomatum*, have panicles as open as those of *P. anceps*, the small spikelets secund as in that species, and appear to be intermediate. FLORIDA: Bay Head, *Combs* 648; Orange County, *Baker* 40; MISSISSIPPI: Starkville, *Kearney* 61; Waynesboro, *Kearney* 108.

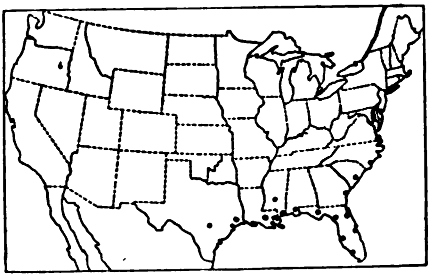


FIG. 105.—Distribution of *P. rhizomatum*.

DISTRIBUTION.

Moist sandy woods and savannas, Virginia to Forida and west to Texas.

VIRGINIA: Lynn Haven, *Hitchcock* 175; Portsmouth, *Noyes* 67 in part.

NORTH CAROLINA: Wilmington, *Chase* 4560, *Hitchcock* 310.

SOUTH CAROLINA: Orangeburg, *Hitchcock* 450; Isle of Palms, *Hitchcock* 104; without locality, *Curtiss* in 1875.

GEORGIA: Savannah, *Kearney* 181; Dock Junction, *Ricker* 962; Camp Cornelia, *Ricker* 933.

FLORIDA: Jacksonville, *Curtiss* 5289, 5747, *Kearney* 138; Duval County, *Curtiss* 3579 in part; Madison, *Combs* 259; Old Town, *Combs* 884; Lake City, *Combs & Rolfs* 120, 192; Waldo, *Combs* 700; Gainesville, *Chase* 4201½, 4220, 4271; Citrus, *Bystra* in 1906; Titusville, *Chase* 3984; Sanford, *Nash* 2258; Grasmere, *Combs* 1051, 1125; Eustis, *Nash* 1713; Ellzey, *Combs* 820; Dunnellon, *Combs* 919; Bay Head, *Combs* 633, 648; Tampa, *Combs* 1395; Avondale, *Combs* 496; Bartow, *Combs* 1192, 1217a; Braidentown, *Combs* 1252, 1264, 1303, *Tracy* 7093, 7105; Myers, *Chase* 4191, *Hitchcock* Lee Co. Pl. 490.

ALABAMA: Without locality, *Mohr* in 1878.

MISSISSIPPI: Centerville, *Tracy* 4564; Nicholson, *Kearney* 358; Biloxi, *Kearney* 235, *Tracy* 3603, 3626, 4619, 4621, and in 1889; Ocean Springs, *Forkert* 33, *Pollard* 1106; Bay St. Louis, *Langlois* in 1883; Pass Christian, *Langlois* in 1880 and 1882.

LOUISIANA: Natchitoches, *Ball* 137.

TEXAS: Pierce, *Tracy* 7405; without locality, *Nealley*.

Laxa.—Plants mostly perennial, apparently annual in *P. laxum* and *P. pilosum*, more or less decumbent at base and rooting at the lower nodes, creeping in *P. polygonatum*, commonly not decumbent in *P. hians* and *P. cupreum;* culms compressed, glabrous; ligules membranaceous, very short or wanting; spikelets short-pediceled, more or less clustered, not over 3 mm. long, glabrous, the palea of the sterile floret, except in *P. polygonatum* and *P. longum*, becoming more or less enlarged and indurated, expanding the spikelet at maturity; fruit mostly elliptic, minutely papillose-roughened, rather thin in texture.

Spikelets pointed, not expanded at maturity by an enlarged sterile palea.
  Nodes densely pubescent; spikelets not over 1.5 mm. long.. 58. *P. polygonatum.*
  Nodes glabrous; spikelets 2.5 mm. long.................. 57. *P. longum.*
Spikelets blunt, expanded at maturity by the enlarged sterile palea.
  Panicle branches subracemose, the spikelets secund; blades at least 5 mm. wide; the enlarged sterile palea not conspicuous.

Rachises bearing slender bristles (these wanting in exceptional specimens); blades broadest near the cordate or truncate base; nodes usually villous.................................... 59. *P. pilosum.*

Rachises without bristles; blades narrowed toward the base; nodes glabrous..................... 60. *P. laxum.*

Panicle branches not racemose; blades scarcely wider than their sheaths; the sterile palea conspicuously enlarged.

Spikelets 3 mm. long, congested; panicles dark purple.. 63. *P. cupreum.*

Spikelets not over 2.4 mm. long; panicles green or pale.

Panicle branches spikelet or branchlet-bearing along the upper half or toward the ends only.................................. 62. *P. hians.*

Panicle branches branchlet-bearing throughout their length or nearly so................. 61. *P. exiguiflorum.*

57. Panicum longum nom. nov.

Panicum munitum Trin.; Steud. Nom. Bot. ed. 2. **2**: 260. 1841. This nomen nudum is credited to "Trin. mpt. Mexico." A specimen of *P. longum* collected near Jalapa by Schiede and Deppe, no. 674, and listed by Schlechtendahl[a] as number 898 "Panicum proximum piloso Sw.," was examined at Halle. The sheet is marked "Panicum munitum" by Trinius, and may be the type of this name, but since the species was not described by Trinius *P. longum* is here based on Scribner's type, *Pringle* 8195.

Panicum pilosum macranthum Scribn. U. S. Dept. Agr. Div. Agrost. Circ. **19**: 1. 1900, not *P. macranthum* Trin. 1826. "Swamps near Jalapa, State of Vera Cruz, altitude 1,230 m., May 21. C. G. Pringle, No. 8195. 1899." The type, in the National Herbarium, is a slender plant 150 cm. high.

DESCRIPTION.

Plants perennial, ascending or spreading from a more or less geniculate base; culms rather robust, 1. 2 to 2 meters long, simple or sparingly branching from the lower nodes, glabrous, the nodes glabrous; sheaths nearly as long as the internodes or overlapping, papillose or papillose-hirsute (the greater number of papillæ without hairs); ligule about 0.5 mm. long; blades ascending or spreading, 10 to 25 cm. long, 6 to 12 mm. wide, linear, scarcely narrowed to the rounded base, very sparsely papillose-pilose on the upper surface, glabrous beneath or with a few papillæ; panicles short-exserted or included at the base, 20 to 25 cm. long, 2 to 5 cm. wide, the branches raceme-like, the lower solitary, distant, the middle and upper opposite or verticillate, the rachises and upper part of the main axis with stiff hairs slightly exceeding the short-pediceled, secund, approximate, but scarcely crowded spikelets; spikelets mostly in pairs, 2.5 mm. long, 0.9 mm. wide, pointed, strongly nerved, the nerves minutely scabrous toward the summit; first glume about half the length of the spikelet, pointed; second glume shorter than the sterile lemma, both slightly exceeding the fruit, the sterile palea

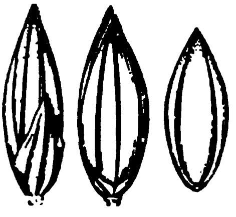


FIG. 108.—*P. longum*. From type specimen of *P. pilosum macranthum* Scribn.

---

[a] Linnaea **6**: 35. 1831.

obsolete; fruit 2.1 mm. long, 0.8 mm. wide, acute, thin in texture, scabrous toward the summit.

This species seems to be more nearly related to *P. polygonatum* than to any other, for which reason it is placed, though somewhat doubtfully, in this group.

DISTRIBUTION.

Swamps, Mexico.

MEXICO: Jalapa, *Pringle* 8195, *Schiede & Deppe* 674 (Halle Herb.).

58. Panicum polygonatum Schrad.

Panicum polygonatum Schrad. in Schult. Mant. **2**: 256. 1824. "*In Brasilia, ad ripas fluvii Ilhéos. Princeps Sereniss. Maxim. Neowidens.*" The type, in the herbarium of the Botanical Garden in St. Petersburg, has a large panicle, pubescent nodes, and a few bristles on the rachis.

Panicum potamium Trin. Gram. Pan. 239. 1826. "Brasil. (LANGSDORFF)." The type, in the Trinius Herbarium, is from near Mandioca, Brazil, collected by Langsdorff "in udis aquosis puris." This name is spelled "*P. potamicum*" by Steudel.[a]

Panicum hydrophilum Trin.; Nees, Agrost. Bras. 208. 1829. This is given as a synonym under *P. dubium* Lam., the specimen referred to as "(*Langsdorff.—V. in Herb.* Trin.)," doubtless being the basis of this name. We have not seen this specimen, but Trinius[b] refers to this name in a note under *P. potamium* as "olim *P. hydrophilum* mihi dictam."

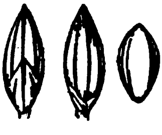


FIG. 107.—*P. polygonatum*. From type specimen.

Setaria polygonata Kunth, Rév. Gram. **1**: 47. 1829. Based on *Panicum polygonatum* Schrad.

Panicum trichogonum Willd.; Steud. Nom. Bot. ed. 2. **2**: 261. 1841. This is given as a synonym under *P. polygonatum* Schrad. with the following citation: "*Willd.* hrb. (Sec. *Trin.* mpt.)." The type, in the Willdenow Herbarium, is labeled "Amer. merid. Humboldt."

Panicum pilosum polygonatum Doell in Mart. Fl. Bras. **2**^{2}: 211. 1877. Based on *P. polygonatum* Schrad.

Panicum bourgaei Fourn. Mex. Pl. **2**: 25. 1886. This name was earlier listed by Hemsley[c] without description. Fournier cites a single specimen, "In valle Cordovensi, januario (BOURG[EAU] n. 1662 part.)." The specimen of this number seen at Halle is *P. polygonatum*, while the one in the Gray Herbarium is *P. laxum*. The original description calls for a plant with pubescent nodes, which would indicate *P. polygonatum*.

DESCRIPTION.

Plants rather freely branching from the lower nodes, widely spreading from a decumbent or creeping base, rooting at the nodes; culms 20 to 100 cm. long, the nodes densely pubescent; sheaths shorter than the internodes or sometimes nearly equal, densely ciliate, otherwise glabrous or hirsute toward the summit; ligules less than 0.5 mm. long; blades ascending or spreading, oblong-lanceolate, 3 to 13 cm. long, 8 to 15 mm. wide, usually ciliate at the cordate base, otherwise glabrous or occasionally sparsely hirsute; panicles 7 to 20 cm. long, about half as wide, the lower branches solitary, distant, spreading, the upper sometimes in pairs, the numerous raceme-like branchlets secund from the lower side of the branches, the somewhat clustered, short-pedicled spikelets also secund on the branchlets, the rachises sparsely pilose with long, weak hairs, or sometimes glabrous; spikelets 1.4 to 1.5 mm. long, 0.5 mm. wide, not thickened, pointed; first glume about half the length of the spikelet, 3-nerved, acute; second glume and sterile lemma equal, 3 to 5-nerved, exceeding the fruit, the sterile palea only about half the length of its lemma; fruit 1 mm. long, 0.5 mm. wide, obovate.

---

[a] Syn. Pl. Glum. 1: 71. 1854.

[b] Mém. Acad. St. Pétersb. VI. Sci. Nat. 1: 266. 1834.

[c] Biol. Centr. Amer. Bot. 3: 486. 1885.

This species differs from *P. laxum* and *P. pilosum* in the pointed spikelets which are not expanded by an enlarged sterile palea, and in the compound lower branches of the panicle.

DISTRIBUTION.

Swamps and moist soil along roads and in open woods, Mexico to Brazil and Paraguay.

MEXICO: Córdoba, *Bourgeau* 1662 in part.

GUATEMALA: Dept. Alta Vera Paz, *Collins & Goll* 08, *Cook & Griggs* 530, *Tuerckheim* 7797, 8795; Puerto Barrios, *Kellerman* 5114.

HONDURAS: San Pedro Sulá, *Thieme* 781, 5578, 5587 in part.

COSTA RICA: Buenos Aires, *Tonduz* 4042; Turrialba, *Tonduz* 4092; Tuís, *Tonduz* 11396; Talamanca, *Tonduz* 8557; Carrillo, *Biolley* 3107; Echeverría, *Pittier & Tonduz* 2479; San José, *Pittier* 1183.

PANAMA: *Hart* 73.

COLOMBIA: Santa Marta, *Smith* 206, 2190.

TRINIDAD: *Fendler* 946 (Kew Herb.).

BRAZIL: Madeira, *Rusby* 199 in part.

PARAGUAY: *Morong* 441.

59. Panicum pilosum Swartz.

Panicum pilosum Swartz, Prodr. Veg. Ind. Occ. 22. 1788. "*Jamaica.*" The type, in the Swartz Herbarium, labeled "Jamaica, Swartz. P. pilosum fl. ind. occ.," consists of two branching plants.

Panicum distichum Lam. Encycl. **4**: 731. 1798. "Cette plante crôit à la Jamaique." The type, in the Lamarck Herbarium, consists of a panicle only. No locality is given upon the label.

Panicum pilisparsum Meyer, Prim. Fl. Esseq. 57. 1818. "In graminosis humidis plantitionis *Hamburg*," Essequibo [British Guiana]. The type is in the Göttingen Herbarium, but a portion of this is in the Trinius Herbarium and was examined there.

Panicum trichophorum Schrad. in Schult. Mant. **2**: 247. 1824. "*In Brasilia. Princeps Sereniss. Maximil. Neowidensis.*" The type is in the Schrader Herbarium at the Botanical Garden in St. Petersburg.

Setaria disticha Humb.; Spreng. Syst. Veg. **1**: 305. 1825. Based on "Panicum distichon Lam."

Panicum distans Willd.; Spreng. Syst. Veg. **1**: 305. 1825. This herbarium name of Willdenow is given as a synonym under *Setaria disticha* Humb. The type, in the Willdenow Herbarium, was collected by Humboldt in "America meridionale."

Panicum densiflorum Willd.; Spreng. Syst. Veg. **1**: 320. 1825. The name is credited to "W. herb.," and the locality is given as "*Ad Orinoc.*" The type collected by Humboldt, in the Willdenow Herbarium, is labeled "Amer. Merid."

Setaria pilosa Kunth, Rév. Gram. **1**: 47. 1829. Based on *Panicum pilosum* Swartz.

Setaria meyeri Kunth, Rév. Gram. **1**: 47. 1829. Based on *Panicum pilisparsum* Meyer.

Setaria schraderi Kunth, Rév. Gram. **1**: 47. 1829. Based on *Panicum trichophorum* Schrad.

Panicum apiculatum Salzm.; Steud. Syn. Pl. Glum. **1**: 65. 1854. This is given as a synonym under *P. pilosum* Swartz. In the Trinius Herbarium and in the United States National Herbarium are specimens bearing this name collected by Salzmann in Bahia, Brazil, which belong to *P. pilosum.*

Panicum distichum lancifolium Griseb. Fl. Brit. W. Ind. 548. 1864. Grisebach bases this upon a specimen from Trinidad collected by Crueger. The type, *Crueger* 84, in the Grisebach Herbarium, is an exceptionally robust plant, with numerous racemes and villous nodes. Grisebach states that the rachis of the branches is glabrous, but the type has slender bristles thinly interspersed. It resembles Hart's no. 732 from Jamaica.

DESCRIPTION.

Plants annual, usually decumbent or creeping at base, rooting at the nodes and sending up erect branches, smaller plants sometimes erect; culms usually branching, 25 to 100 cm. high, the nodes villous or sometimes glabrous or nearly so; sheaths elongated, but usually less so than the internodes, keeled, separating more or less from the culm, exposing the long prophyllum, and inrolled at the summit, somewhat simulating a petiole to the blade, glabrous or sometimes ciliate or sparsely hirsute; ligules wanting; blades ascending or spreading, narrowly lanceolate, 4 to 20 cm. long, 7 to 15 mm. wide, broadest near the cordate or truncate base, puberulent at the very base, otherwise glabrous or sometimes sparsely pubescent; panicles consisting of 10 to 40 spike-like, densely-flowered, somewhat spreading racemes along an axis 5 to 15 cm. long, the lower distant; racemes 1 to 3 cm. long, straight or curved, bearing numerous spikelets in clusters of 1 to 3 secund on the lower side, the rachises copiously to sparsely papillose-hispid, the hairs 1 to 3 mm. long, wanting in occasional specimens; spikelets about 1.5 mm. long, 0.6 mm. wide, and nearly 1 mm. thick; first glume about half the length of the spikelet; second glume and sterile lemma equal, the former 5, the latter 3-nerved, both scabrous on the midnerve at the apex, the sterile palea as long as its lemma, becoming subrigid and forcing open the spikelet; fruit 1.3 mm. long, 0.6 mm. wide.

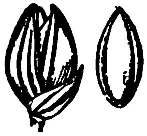


Fig. 108.—*P. pilosum*. From type specimen.

This species differs from *P. laxum* in the more freely branching habit, comparatively shorter and uniformly cordate or truncate blades, and smaller panicles of shorter, denser racemes, usually conspicuously bristly. In the following specimens the bristles are wanting: *Curtiss* 305, *Rovirosa* 599, *Rusby & Squires* 79. The latter is also exceptional in having pubescent spikelets. In this species an occasional internode is much shortened, thus giving a few leaves the appearance of being nearly in pairs. Most of the specimens from North America have villous nodes, but those from South America are commonly glabrous on the nodes.

DISTRIBUTION.

Fields and open woods, Mexico, West Indies, and south to Brazil.

MEXICO: Mirador, *Liebmann* 411; Chiapas, *Nelson* 3056; San Juan Bautista, *Rovirosa* 599.

GUATEMALA: Los Andes, *Kellerman* 5119; Dept. Alta Vera Paz, *Goll* 11, *Tuerckheim* 8797.

HONDURAS: San Pedro Sulá, *Thieme* 5587 in part; Bonacco Island, *Gaumer*.

NICARAGUA: *Wright*.

COSTA RICA: Rio Hondo, *Cook & Doyle* 499; Talamanca, *Tonduz* 9495; Puerto Viejo, *Biolley* 7463.

PANAMA: *Fendler* 368.

CUBA: Herradura, *Tracy* 9063, *Van Hermann* 763; Dayaniguas, *Wright* 3451 in part; Sancti Spiritus, *León* 908; Isle of Pines, *Curtiss* 305, *Taylor* 36.

JAMAICA: Gordon Town, *Hart* 732; Navy Island, *Millspaugh* 1859 (Hitchcock Herb.), Port Morant, *Hitchcock* in 1890 (Hitchcock Herb.).

LEEWARD ISLANDS: Guadeloupe, *Duss* 4154.

WINDWARD ISLANDS: Granada, *Broadway* in 1904.

COLOMBIA: Santa Marta, *Smith* 203.

VENEZUELA: Sacupana, *Rusby & Squires* 79, 347.

TRINIDAD: *Hart* 3293.

TOBAGO: *Eggers* 5534.

BRITISH GUIANA: *Jenman* 5969.

DUTCH GUIANA: *Hostmann* 641 (Gray Herb.).

FRENCH GUIANA: *Rotherey* 14.

BRAZIL: Falls of Madeira, *Rusby* 210 in part; Campinas, *Novaes* 1288; Bahia, *Salzmann;* Rio Janeiro, *Widgren*, *Wilkes* Expl. Exped. in part; without locality, *Riedel;* Piauhy, *Gardner*.

BOLIVIA: Mapirí, *Rusby* 212.

PARAGUAY: *Hassler* 8192 (Gray Herb.).

60. **Panicum laxum** Swartz.

Panicum laxum Swartz, Prod. Veg. Ind. Occ. 23. 1788. "*Jamaica.*" The type, in the Swartz Herbarium, is the upper part of a culm. The spikelets are 2.2 to 2.3 mm. long. A specimen in the Munich Herbarium sent by Swartz as *P. laxum* is a species of Leptochloa.

Panicum agrostidiforme Lam. Tabl. Encycl. 1: 172. 1791. Lamarck cites "Ex Amer. merid. *Communic. A. D. Richard.*" The type, in the Lamarck Herbarium, is the upper part of a culm.

Panicum tenuiculmum[*e*] Meyer, Prim. Fl. Esseq. 58. 1818. Meyer gives no particular locality. The type is in the Göttingen Herbarium, but the portion examined is in the Trinius Herbarium, having been sent by Meyer to Trinius.

Panicum diandrum Kunth, Rév. Gram. 2: 393. *pl. 110.* 1829. "Crescit in insulæ Guadelupæ inque Brasilia." The type, in the Berlin Herbarium, being the plant figured, was collected in Guadeloupe by Balbis in 1844.

Panicum leptomerum Presl, Rel. Haenk. 1: 311. 1830. The locality was unknown to Presl, who gives "Hab........." The type, collected by Haenke, in the Bohemian Museum, bears the name but no locality.

Panicum ramuliflorum Hochst.; Steud. Syn. Pl. Glum. 1: 65. 1854. This is based on "Pl. *Kappler* surin. nr. 1523." Specimens of this number have been examined at Munich and Leipzig, but none was found in the Steudel Herbarium.

Agrostis nigrescens Salzm.; Steud. Syn. Pl. Glum. 1: 65. 1854. "Bahia." This name is mentioned under *Panicum ramuliflorum* Hochst. as applying to a variety "ramulis paniculae densiflorus." Steudel gives the name earlier,[a] but as a nomen nudum. Salzmann specimens from Bahia, bearing this name, in the Trinius Herbarium and in the United States National Herbarium, are densely flowered forms of *P. laxum*.

Panicum nigrescens Salzm.; Steud. Syn. Pl. Glum. 1: 66. 1854. This is given as a synonym under *P. laxum* Swartz. Doell[b] also gives this name in the same way. It is doubtless the same as *Agrostis nigrescens*, but we have seen no Salzmann specimen labeled *Panicum nigrescens*.

Panicum agrostis Nees; Doell in Mart. Fl. Bras. 2^2: 213. 1877. This is given as a synonym under *P. laxum* Swartz, and is credited to "*Nees in herb. schedulis.*" The type, in the Berlin Herbarium, was collected in Brazil by Sello.

Panicum laxum pubescens Doell in Mart. Fl. Bras. 2^2: 213. 1877. The first specimen cited by Doell is "*Prope Santarem* (*Spruce* '*Panicum n. 26*')." The type, in the Munich Herbarium, has pubescent spikelets.

Panicum pilosum epilosum Fourn. Mex. Pl. 2: 24. 1886. This appears to be founded on *P. agrostidiforme* Lam., as this is the first synonym given. The specimens cited by Fournier belong to *P. laxum* Swartz.

---

[a] Nom. Bot. ed. 2. 1: 41. 1841.

[b] Mart. Fl. Bras. 2^2: 213. 1877.

DESCRIPTION.

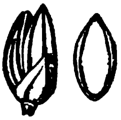


FIG. 109.—*P. laxum*. From type specimen.

Plants more or less spreading, often rooting at the nodes of the decumbent base; culms simple or sparingly branching, 40 to 100 cm. or more high; sheaths shorter than the elongated internodes, ciliate and hirsute at the juncture with the blade, otherwise glabrous or papillose-hirsute toward the summit; ligules fimbriate, about 0.5 mm. long; blades erect or ascending, conduplicate or flat, 10 to 25 cm. long, 5 to 15 mm. wide, rarely wider, narrowed to the rounded or subcordate base, glabrous or with a few scattered hairs on the upper surface; panicles oblong in outline, 5 to 30 cm. long, composed of many slender, raceme-like branches, the lower distant, spreading, sometimes as much as 10 cm. long, the upper ascending; branchlets very short, mostly secund on the lower side of the branches, bearing 2 or 3 spikelets, or a few toward the base of the lower branches 5 to 10 mm. long; spikelets 1.1 to 1.5 mm. long, about 0.7 mm. wide and as thick or thicker; first glume one-third to half the length of the spikelet, subacute, 1 to 3-nerved; second glume slightly shorter than the sterile lemma, the latter subtending a palea of nearly equal length, this becoming subrigid at maturity forcing open the spikelet; fruit 1 to 1.1 mm. long, about 0.5 mm. wide.

This widely distributed species is variable in appearance. The following exceptionally robust specimens from Mexico and Guatemala have comparatively short, cordate blades 1.5 to 1.8 cm. wide, and very turgid spikelets 1.5 mm. long, a few stiff hairs on the branchlets: *Finck* 3, *Liebmann* 419, *Purpus* 2159, 2160,[a] *Tuerckheim* 1254.

Tonduz's no. 3071 and his no. 4868, in the Costa Rica Herbarium, have pubescent spikelets as in the Spruce specimen upon which Doell bases his variety *pubescens*. These appear to be merely exceptional specimens.

DISTRIBUTION.

Savannas and open woods, Mexico, West Indies, and south to Paraguay.

MEXICO: Culiacán, *Palmer* 1558 in 1891; Mirador, *Liebmann* 412, 419; Córdoba, *Finck* 3; Mayito, *Rovirosa* 427; Zacualpan, *Purpus* 2159, 2160 in part; Orizaba, *Botteri* 688.

GUATEMALA: Dept. Alta Vera Paz, *Tuerckheim* 1254, 8803; Santa Rosa, *Heyde & Lux* 3900; Puerto Barrios, *Pittier* 361.

HONDURAS: San Pedro Sulá, *Thieme* 5587 in part.

COSTA RICA: Buenos Aires, *Tonduz* 4864, 4871; Rio Tilirí, *Tonduz* 3071; Turrialba, *Pittier* 16123; Las Mesas, *Pittier* 3117.

BAHAMAS: Turk Island, *Madiana* (Gray Herb.).

CUBA: Herradura, *Caldwell & Baker* 7136, *Hitchcock* 177, *Tracy* 9054, 9062, 9072, 9099; Wajay, *Earle & Wilson* 343; Santiago de las Vegas, *Hitchcock* 178, *Tracy* 9114; Retiro, *Wright* 759; Guanabacoa, *León* 914; Sancti Spiritus, *León* 907, 909; without locality, *Wright* 3751 in part, 3863 in part; Isle of Pines, *Curtiss* 464, *Palmer & Riley* 1069, *Taylor* 37.

PORTO RICO: Utuado, *Britton & Cowell* 394; Cayey, *Heller & Heller* 522; Cataño, *Heller & Heller* 1378; Ponce, *Heller* in 1902; Mayaguez, *Sintenis* 360; Fajardo, *Sintenis* 1254; Mount Morales, *Britton & Marble* 1068; without locality, *Eggers* 1329.

DANISH WEST INDIES: St. Thomas, *Eggers* 165 (Gray Herb.).

LEEWARD ISLANDS: Guadeloupe, *Duss* 3179.

WINDWARD ISLANDS: St. Lucia, *U. S. Fish Com.* in 1887; Barbadoes, *Dash* 450; Granada, *Broadway* in 1905.

---

[a] *Panicum viscidellum* Scribn. was also distributed under this number.

COLOMBIA: Santa Marta, *Smith* 202, 204; Córdoba, *Pittier* 521, 553; Cali, *Pittier* 665.

TRINIDAD: *Hart* 2177, 2289.

BRITISH GUIANA: *Jenman* 6008, 6009.

FRENCH GUIANA: *Sagot* 692 (Gray Herb.).

BRAZIL: Bahia, *Salzmann*; Madeira, *Rusby* 210; Prov. Goyaz, *Gardner* 3517; Campinas, *Novaes* 1246; Rio Janeiro, *Wilkes* Expl. Exped. 10; without locality, *Gardner* 1183, *Riedel* 52, *Sello*.

PARAGUAY: *Hassler* 8465, *Morong* 534, 537, 977, 1574.

URUGUAY: *Arechavaleta* 31 in 1888, 2 in 1893.

ECUADOR: Balao, *Eggers* 14585.

BOLIVIA: Mapirí, *Rusby* 228, 236; Unduavi, *Rusby* 22; Yungas, *Bang* 266, in part, 308a; Chaco, *Fries* 1537.

61. **Panicum exiguiflorum** Griseb.

Panicum minutiflorum Rich. in Sagra, Hist. Cuba **11**: 305. 1850, not Rasp. 1825. "Crescit in pratis et locis herbosis insulae Cubae." The type, in the Paris Herbarium, is labeled "Insula Cuba. Legit Ramon de la Sagra."

Panicum laxum variegatum Griseb. Cat. Pl. Cub. 233. 1866. The only specimen cited is *Wright* 3450. The type, in the Grisebach Herbarium, is from western Cuba, 1863, and is numbered "909=3450."

Panicum exiguiflorum Griseb. Cat. Pl. Cub. 234. 1866. Based on "*P. minutiflorum* Rich. ex descr., non Hochst."

Panicum tricolor Hack. Oesterr. Bot. Zeitschr. **51**: 370. 1901. "In insulis Bahama; Fortune Island, inter frutices, Eggers nr. 3978." The type is in Hackel's herbarium.

DESCRIPTION.

Plants perennial, cespitose, sometimes sending out prostrate, stolon-like shoots; culms simple or sparingly branching from the upper nodes, erect from a decumbent or ascending base, slender, wiry, 15 to 50 cm. high, the lower nodes geniculate; sheaths much shorter than the elongated internodes, ciliate, otherwise glabrous; ligules membranaceous, delicate, fimbriate; blades appressed or ascending, 2 to 6 cm. long, 0.5 to 1.5 mm. wide, glabrous; panicles 3 to 10 cm. long, one-third to half as wide, the slender branches few, spreading or reflexed at maturity, bearing short, divergent branchlets with clustered, short-pediceled spikelets; spikelets 1.4 to 1.5 mm. long, about 0.5 mm. wide, and twice as thick; first glume about one-third the length of the spikelet, 3-nerved; second glume about two-thirds the length of the subequal sterile and fertile florets, the sterile palea very large and firm at maturity, much expanding the spikelet; fruit 1.3 mm. long, 0.5 mm. wide, acute.

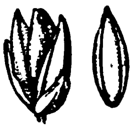


FIG. 110.—*P. exiguiflorum*. From type specimen of *P. laxum variegatum* Griseb.

The immature spikelets are dorsally compressed, as characteristic in this genus, but as they mature the sterile palea becomes greatly enlarged, with broad firm wings, and forces the spikelet open. In this character and in habit this species is most closely related to *P. hians* Ell.

DISTRIBUTION.

Low savannas and moist sandy woods, Bahamas and Cuba.

BAHAMAS: Fortune Island, *Eggers* 3978 (Hackel Herb.), *Hitchcock* in 1890; Inagua, *Nash & Taylor* 1450; Long Cay, *Brace* 4158, 4164; Acklins Island, *Brace* 4380 (all in Field Mus. Herb.).

CUBA: Chirigote, *Wright* 3450; Herradura, *Hitchcock* 179, *Tracy* 9075; Prov. of Santa Clara, *León* 902; Guanabacoa, *León* 911, 913; Isle of Pines, *Taylor* 35.

62. **Panicum hians** Ell.

Panicum hians Ell. Bot. S. C. & Ga. **1**: 118. 1816. Elliott gives no particular locality, but he states that the species is "Very abundant near Michaux's old farm, 10 miles from Charleston." The type, in the Elliott Herbarium, is labeled "Panicum Hians mihi. Hab: in pinetis humidis," but without particular locality.

Panicum oblongiflorum Desv. Opusc. 89. 1831. "Habitat in Carolina * * * à Bosc." The type is in the Desvaux Herbarium.

Panicum jejunum Trin. Mém. Acad. St. Pétersb. VI. Sci. Nat. **2**^{1}: 103. 1836. "Louisiana." The type specimen, in the Trinius Herbarium, is marked "Louisiana. mis. Hooker. 1835."

Aira incompleta Bosc; Steud. Nom. Bot. ed. 2. **1**: 45. 1840. This is a nomen nudum mentioned as a synonym of *Panicum debile* [no author cited], but there is no cross reference under *Panicum debile*. We have seen specimens of this collected by Bosc, in the Trinius Herbarium, in the Padua Herbarium, and in the Delessert Herbarium. All are *Panicum hians*. In the absence of any evidence as to which is the type specimen we take as the type the one in the Padua Herbarium, which appears to contain Bosc's own herbarium. The locality of this is given as "Caroline."

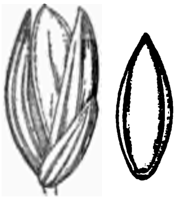


Fig. 111.—*P. hians*. From type specimen.

Steinchisma hians Raf.; Ind. Kew. **2**: 982. 1895. Based on *Panicum hians* Ell. Nash[a] segregated the genus Steinchisma and was followed by Hitchcock.[b] Steinchisma was first mentioned by Rafinesque[c] in a letter to De Candolle in which he proposes several new genera, this genus appearing as follows: "Steinchisma=Panicum divaricatum, hians." This probably refers to *Panicum hians* Ell. and to *P. divaricatum* Michx. which is given by Elliott as a queried synonym under *P. hians*. *Panicum divaricatum* Michx. is, however, *Festuca obtusa* Spreng.[d] Rafinesque's name is given by Steudel[e] as "Steinschisma Rafin. Panicum debile." *Panicum debile* Ell. is *P. verrucosum* Muhl.

Nash separated the genus Steinchisma on the character of the enlarged palea of the sterile floret. This character is shared by *Panicum exiguiflorum*, *P. cupreum*, the South American *P. decipiens* Nees, and, in less pronounced form, by *P. laxum* and *P pilosum*, while *P. polygonatum*, which is evidently allied to *P. laxum*, has a very small palea. This character, since it proves not to be correlated with any other, does not seem to us sufficient for the segregation as a genus of those species showing it, especially since such segregation would place closely allied species in separate genera.

Beal[f] and Scribner[g] misapply the name *Panicum melicarium* Michx. to *P. hians* Ell. *Panicum melicarium* Michx. is *Panicularia elongata* (Torr.) Kuntze, *P. melicaria* (Michx.) Hitchc.[h]

DESCRIPTION.

Plants perennial, cespitose; culms simple or sparingly branching, 20 to 60 cm. high, erect or a few of the outer ones geniculate and rooting at the lower nodes, sometimes prostrate and sending up erect branches; sheaths usually much shorter than the internodes, keeled, glabrous; ligules about 0.5 mm. long; blades 5 to 15 cm. long, 1 to 5 mm. wide, usually scarcely wider than the sheaths, erect, flat or folded, pilose on the upper surface near the base, otherwise glabrous; panicles 5 to 20 cm. long, usually loose and open, the primary branches few, slender, distant, spreading or drooping, sometimes rather narrow and compact, with ascending branches, the branchlets borne along the upper half or toward the ends only, the short-pediceled spikelets in more or less secund clusters; spikelets 2.2 to 2.4 mm. long, about 0.8 mm. wide and twice as thick at maturity, rather strongly nerved; first glume about half the length of the spikelet, acute; second glume and sterile lemma subequal, slightly exceeded by the enlarged, indurated sterile palea; fruit 1.8 to 1.9 mm. long, 0.7 mm. wide, the margins of the lemma scarcely inrolled.

---

[a] Small, Fl. Southeast. U. S. 105. 1903.

[b] A. Gray, Man. ed. 7. 117. 1908.

[c] Bull. Bot. Seringe 220. 1830.

[d] See Hitchcock, Contr. Nat. Herb. **12**: 149. 1908.

[e] Nom. Bot. ed. 2. **2**: 635. 1841.

[f] Grasses N. Amer. **2**: 127. 1896.

[g] U. S. Dept. Agr. Div. Agrost. Bull. **7**: 66. *f. 48*. 1897.

[h] See Hitchcock, Contr. Nat. Herb. **12**: 149. 1908.

The immature spikelets are dorsally compressed; it is only as they mature that the characteristic induration of the sterile palea takes place.

DISTRIBUTION.

Damp soil along ponds and streams, North Carolina to Florida, west to New Mexico and north through Arkansas to southern Missouri and Oklahoma.

Missouri: Campbell, *Bush* 120.

North Carolina: Rowan County, *Small & Heller* 205; Wilsons Mills, *Chase* 3098.

South Carolina: Columbia, *Curtiss* 3594; Orangeburg, *Hitchcock* 451.

Georgia: Savannah, *Kearney* 187; Bulloch County, *Harper* 838; Oliver, *Curtiss* 6836.

Florida: Jacksonville, *Combs* 26, *Kearney* 173; Lake City, *Combs* 117, 125, 172, 187; Madison, *Combs* 262; River Junction, *Combs* 434; Pensacola, *Combs* 526; Quincy, *Combs* 427; Chipley, *Combs* 587; Waldo, *Combs* 712; Ellzey, *Combs* 831; Arcadia, *Combs* 1246; Eustis, *Nash* 213; Jupiter, *Curtiss* 5534; Manatee, *Rugel* 231; Braidentown, *Combs* 1261, 1325, *Tracy* 7038; Pease Creek, *Curtiss* 3594; Myers, *Hitchcock* 872, Lee Co. Pl. 488, 489; Miami, *Chase* 3889.

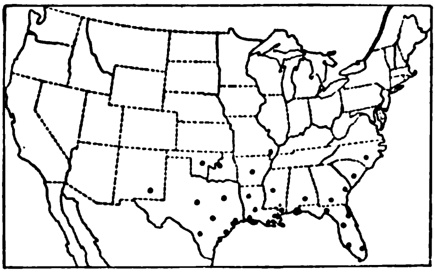


Fig. 112.—Distribution of *P. hians*.

Alabama: Tuskegee, *Carver* 47; Mobile, *Kearney* 30, *Mohr* in 1883.

Mississippi: Nicholson, *Kearney* 363; Starkville, *Tracy* in Pollard Distr. 1418; Waynesboro, *Kearney* 121; Ocean Springs, *Seymour* 25.

Arkansas: Central Arkansas, *Harvey;* Malvern, *Eggert* 117.

Louisiana: Rayville, *Ball* 26; Calhoun, *Ball* 60, *Hitchcock* 1282; Alexandria, *Ball* 535; Oberlin, *Ball* 190; Red River Parish, *Ball* 123; Abbeville, *Langlois* in 1884; Lake Charles, *Hitchcock* 1133, *Tracy* in 1897.

Texas: Jacksonville, *Plank* 63; Luling, *Plank* 18; Texarkana, *Heller & Heller* 4103, 4145; Huntsville, *Plank* 65; Orange, *Plank* 46; Pierce, *Tracy* 7745; Terrell, *Warburton* in 1904; Hempstead, *Hall* 815; Indianola, *Ravenel* in 1869; Ennis, *Smith* in 1898; Harvester, *Hitchcock* 1184, *Thurow* in 1898; Galveston, *Plank* 35, 83; Kingsville, *Piper* in 1906; Cold Creek, *Bigelow* in 1853; without locality, *Reverchon* 99 in 1879.

Oklahoma: Sapulpa, *Bush* 707, 708, 709; on the Washita, *Palmer* 381 in 1868.

New Mexico: Las Cruces, *Plank* 6.

63. Panicum cupreum nom. nov.

Panicum hians purpurascens Scribn. Proc. Acad. Phila. **1891**: 296. 1891, not *P. purpurascens* H. B. K. 1815. "(3449) [Pringle] * * * Wet hollows in prairies of Flor de Maria, State of Mexico. September 4." The type is in Hitchcock's herbarium. It was collected in 1890.

DESCRIPTION.

Plants perennial, in small tufts; culms simple, erect, 40 to 60 cm. high, slender, wiry, glabrous; leaves somewhat clustered at the base, the sheaths keeled, glabrous, the lower overlapping, the upper shorter than the internodes; ligules fimbriate, scarcely 0.5 mm. long; blades 5 to 15 cm. long, 2 to 4 mm. wide, at the base scarcely as wide as the sheaths, erect or ascending, folded and more or less twisted, glabrous or with a few long hairs on the upper surface at the base; panicles very long-exserted, 3 to 11 cm. long, dark purple, composed of a few distant, slender, appressed or ascending branches, naked about half their length, bearing short, crowded branchlets with densely clustered spikelets along the upper half or toward the ends; spikelets 3 mm. long, about 1.2 mm. wide, and at maturity nearly twice as thick, rather strongly nerved; first glume one-third the length of the spikelet or less, obtuse, concave along the midnerve; second glume and sterile lemma equal, exceeded by the enlarged sterile palea, the lemma strongly concave along the midnerve below; fruit 2.4 mm. long, 0.8 mm. wide, the margins of the lemma more inrolled than in *P. hians*, the apex tipped with a minute bit of hyaline membrane.

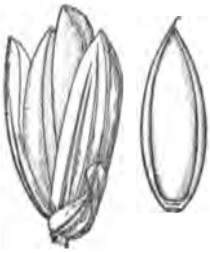


FIG. 113.—*P. cupreum*. From type specimen of *P. hians purpurascens* Scribn.

This species is allied to *P. hians*, from which it is chiefly distinguished by the larger, more congested spikelets, with shorter, concave first glume and concave sterile lemma.

The type collection, Pringle's no. 3449, two specimens of which we have seen, is the only one known of this species.

Stolonifera.—Plants perennial, decumbent at base or widely creeping and rooting at the nodes; culms branching, pubescent in lines or glabrate; sheaths (except in *P. biglandulare*) with a dense line of pubescence at the summit; ligules membranaceous, nearly obsolete; blades lanceolate or ovate-lanceolate, acuminate and with a pubescent, petiole-like base; panicles composed of few to several short, densely-flowered racemes along a main axis, a tuft of pubescence at the bases of the rachises; spikelets short-pediceled, mostly in 2's, secund along the lower side of the rachis, strongly nerved, the second glume and sterile lemma scabrous on the midnerves toward the summit, exceeding the smooth and shining fruit.

Spikelets hispid and with 2 crateriform glands on the sterile lemma; second glume and sterile lemma not boat-shaped.
  Spikelets not over 2 mm. long; blades not over 4 cm. long. 66. *P. pulchellum*.
  Spikelets 3.6 mm. long; blades 4 to 10 cm. long.......... 67. *P. biglandulare*.
Spikelets glabrous, glandless; second glume and sterile lemma boat-shaped.
  Blades not over 5 cm., usually 2 or 3 cm. long; second glume rather blunt and shorter than the sterile lemma.. 64. *P. stoloniferum*.
  Blades 5 to 11 cm. long; second glume acute, nearly equaling the sterile lemma.............................. 65. *P. frondescens*.

64. **Panicum stoloniferum** Poir.

Panicum stoloniferum Poir. in Lam. Encycl. Suppl. **4**: 274. 1816. "Cette plante croît à l'ile de Cayenne." The type is in the Cosson Herbarium.

Panicum ctenodes Trin. Gram. Icon. **2**: *pl. 171.* 1829. Trinius cites no specimen nor particular locality, but states that the figure is "ad specimen Brasiliense." There is apparently no specimen in the Trinius Herbarium bearing this name, but in the Berlin Herbarium is a specimen from Trinius which is probably a part of the type, and which bears the name in Trinius's handwriting. . It was collected in Brazil by Beyrich.

Panicum leprieurii Steud. Syn. Pl. Glum. **1**: 65. 1854. Two specimens are cited, "P. stoloniferum *Hochst.* Hrbr. *Kappler* nr. 1500. Surinam et *Leprieur* in Cayenne." On account of the specific name Leprieur's specimen is taken as the type. This is in the Steudel Herbarium at Paris. It is a somewhat undersized specimen labeled, "Cayenne, Leprieur 1835."

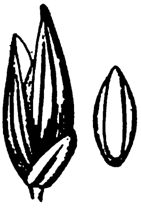


FIG. 114.—*P. stoloniferum.* From type specimen.

DESCRIPTION.

Plants creeping, freely branching; culms 10 to 50 cm. long, with two opposite lines of minute crisp pubescence, rarely pubescent all over or glabrate, the nodes pubescent or glabrous; sheaths shorter than the internodes or overlapping on the branches, ciliate, otherwise glabrate, or crisp-pubescent; ligules fimbriate, about 0.2 mm. long; blades 1 to 5 cm. long, 3 to 15 mm. wide, the margins undulate, glabrous or sparsely pilose on the upper surface, minutely soft-pubescent beneath; panicles 1 to 5 cm. long, about one-third as wide, racemes 5 to 10 mm. long, ascending or spreading, the main axis more or less pubescent; spikelets 2.3 to 2.5 mm. long, about 0.6 mm. wide and 1 mm. thick, glabrous; first glume about one-third the length of the spikelet, 3-nerved, blunt; second glume blunt, shorter than the acute sterile lemma, both somewhat boat-shaped, 5-nerved, the sterile palea about half as long as its lemma; fruit 1.3 mm. long, 0.5 mm. wide, acute.

DISTRIBUTION.

Woods and low grounds, Guatemala to Brazil and Ecuador.

GUATEMALA: Puerto Barrios, *Pittier* 364.
TRINIDAD: *Broadway* 2370; *Crueger* 79, *Bot. Gard. Herb.* 2293.
BRITISH GUIANA: *Jenman* 4081.
DUTCH GUIANA: "Surinam" *Hering* (Acad. Phil. Herb.).
FRENCH GUIANA: *Sagot* 667.
BRAZIL: *Beyrich* (Trinius Herb.).
ECUADOR: Balao, *Eggers* 14149.

65. **Panicum frondescens** Meyer.

Panicum frondescens Meyer, Prim. Fl. Esseq. 56. 1818. "In graminosis umbrosis insulae Arouabisch" [British Guiana]. We have not examined the type, which is at Göttingen, but we have seen in the Trinius Herbarium a portion of it which was sent by Meyer.

Panicum olyraefolium Raddi, Agrost. Bras. 43. *pl. 1. f. 6.* 1823. Raddi states[a] that this occurs "in sepibus prope fossas udas in viciniis *Rio-Janeiro.*" We have not seen the type of this, but the description and figure agree with *P. frondescens.*

---

[a] Op. cit. 44 under *P. donacifolium.*

Panicum ctenodes majus Trin. Grám. Icon. 2: *pl. 171. f. A.* 1829. In the description of *P. ctenodes* a larger variety is referred to and figure A of the plate represents this form. It does not appear certain that Trinius intended to name this in this way, but in the explanation of the figure "ad specimen Brasiliense" he uses the term "Var. major," and Kunth[a] cites the name as "*Panicum ctenodes* var. *major*." The type is in the Trinius Herbarium. It is a shoot without a label, lying on a sheet of specimens of *P. stoloniferum* from Brazil and appears to be the basis of figure A. One of the loose labels may belong to this specimen.

Panicum stoloniferum major[*us*] Kunth, Rév. Gram. 2: 389. 1831. Based on *Panicum ctenodes majus* Trin.

Panicum brachyclados Reichenb.; Trin. Mém. Acad. St. Pétersb. VI. Sci. Nat. 1: 251. 1834. This is given as a synonym under *P. frondescens* Meyer, the authorship being given as "*Rchbch.* in Weig. hb. Surin." The type, in the Trinius Herbarium, is labeled "Panicum (Echinochloa) brachyclados. Surinam. ex herb. Reichenb."

Panicum kegelii Steud. Syn. Pl. Glum. 1: 65. 1854. "Guatemala." There is a specimen in the Berlin Herbarium bearing this name, collected in Guatemala by Kegel (no. 12716), which may be the type. No specimen of this was seen in the Steudel Herbarium.

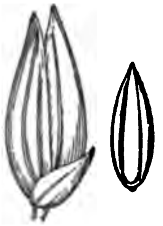


FIG. 115.—*P. frondescens*. From type specimen.

Panicum umbrosum Salzm.; Steud. Syn. Pl. Glum. 1: 65. 1854, not Retz. 1786. This is given as a synonym under *P. stoloniferum* Poir. The type, in the Paris Herbarium, is from Bahia, Brazil.

DESCRIPTION.

Culms ascending from a decumbent or creeping base, less freely branching than in *P. stoloniferum*, 30 to 50 cm. high, compressed, glabrous except below the panicle or sometimes with two lines of pubescence toward the summit of the internodes; nodes black; sheaths shorter than the internodes, densely ciliate, otherwise glabrous; ligules nearly obsolete; blades 5 to 11 cm. long, 12 to 20 mm. wide, acuminate, narrowed toward the base, glabrous; panicles 5 to 11 cm. long, usually less than one-third as wide, rather compact, the numerous, approximate racemes ascending or somewhat spreading, the lower 10 to 25 mm. long; spikelets 2.6 to 2.8 mm. long, about 0.6 mm. wide and 1 mm. thick, glabrous; first glume scarcely one-third the length of the spikelet, acute, scabrous on the midnerve; second glume and sterile lemma subequal, somewhat boat-shaped, acute, the sterile palea about two-thirds as long as its lemma; fruit 1.6 mm. long, 0.5 mm. wide, pointed, short-stipitate.

This species resembles *P. stoloniferum*, but is larger in all its parts, while the numerous racemes are usually aggregated into a rather compact panicle.

The spikelets of this species and of *P. stoloniferum*, with their somewhat boat-shaped second glume and sterile lemma, suggest species of Sacciolepis. In this species the stipitate fruit also shows an approach to that genus, but the habit is wholly different.

DISTRIBUTION.

Moist woods, Mexico to Brazil and Peru.

MEXICO: Papantla, *Liebmann* 405; St. Sebastian, *Rovirosa* 497.
GUATEMALA: Dept. Peten, *Walker* 1138.
TRINIDAD: *Broadway* 2371.
BRITISH GUIANA: *Meyer* (Trinius Herb.).
DUTCH GUIANA: *Weigelt* (Trinius Herb.); *Hering* (Acad. Phil. Herb.).
FRENCH GUIANA: *Sagot* 689 (Gray Herb.).

---

[a] Rév. Gram. 2: 389. 1831.

Brazil: Bahia, *Salzmann;* Rio Janeiro, *Wilkes* Expl. Exped. 11; São Paulo, *Löfgren & Edwall* 2803; Porto Alegre, *Reineck & Czermak* 241.
Peru: *Pöppig* (Trinius Herb.).
Bolivia: Mapirí, *Rusby* 229.

66. Panicum pulchellum Raddi.

Panicum pulchellum Raddi, Agrost. Bras. 42. 1823. "In sylvaticis prope *Catumby,* non procul ab Urbe *Rio de janeiro.*" There is a specimen in the herbarium of the British Museum marked "Panicum pulchellum Rad. Rio janeiro. Raddi" which appears to be authentic, but probably is not the type.

Eriochloa? pulchella Kunth, Rév. Gram. **1:** 30. 1829. Based on *Panicum pulchellum* Raddi.

Panicum leptostachyum Presl, Rel. Haenk. **1:** 311. 1830. "*Hab. in Mexico.*" The type, in the herbarium of the Bohemian Museum, is labeled "Mexico."

DESCRIPTION.

Plants apparently perennial, decumbent or creeping at base; culms slender, rather freely branching, ascending, pubescent in lines or glabrate, the nodes bearded; sheaths short, softly pubescent or glabrate; ligules ciliate, about 0.3 mm. long; blades thin, spreading, 1.5 to 4 cm. long, 4 to 15 mm. wide, rather abruptly acuminate, unsymmetrically subcordate; panicles oblong, 2 to 12 cm. long, rarely over 2 cm. wide, the racemes 5 to 15 mm. long, all about the same length, ascending or finally spreading, distant or approximate toward the summit; spikelets 1.8 to 2 mm. long, about 0.8 mm. wide, turgid but not thicker than wide, hispid, the hairs longer toward the margin; first glume one-third to half the length of the spikelet, acute, 3-nerved; second glume and sterile lemma subequal, acute, the latter bearing at either side of the midnerve a crateriform gland, the sterile palea about three-fourths as long as its lemma; fruit 1.3 mm. long, 0.6 mm. wide, rather blunt.

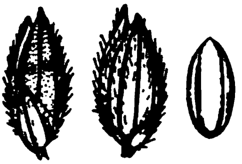


Fig. 116.—*P. pulchellum.* From Raddi's specimen in British Museum.

DISTRIBUTION.

Woods and savannas, Mexico to Brazil and Bolivia.

Mexico: Córdoba, *Bourgeau* 1455; Minatitlan, *Smith* 589 (Hitchcock Herb.).
Guatemala: Dept. Alta Vera Paz, *Cook & Griggs* 284, *Maxon & Hay* 3153, *Tuerckheim* 7702, 8794; El Palmar, *Kellerman* 6246.
Costa Rica: Boruca, *Pittier* 4459, *Tonduz* 4460 in part; Cañas Gordas, *Pittier* 7360; Buenos Aires, *Tonduz* 4881.
Brazil: Rio Janeiro, *Raddi* (British Mus. Herb.).
Bolivia: Guanaí, *Rusby* 217.

67. Panicum biglandulare Scribn. & Smith.

Panicum biglandulare Scribn. & Smith, U. S. Dept. Agr. Div. Agrost. Bull. **4:** 13. *pl. 4.* 1897. "Near Pinabete, Chiapas, February 8, 1896, at an altitude of 6,500 to 8,000 feet; No. 3781," collected by E. W. Nelson. The type, in the National Herbarium, is a culm 120 cm. long, bearing two ascending branches about the middle, the lower portion being naked.

DESCRIPTION.

Culms ascending from a decumbent base, becoming spreading and much-branched, somewhat compressed, the line of pubescence sparse or wanting; sheaths densely papillose-ciliate, otherwise glabrous; blades 4 to 10 cm. long, 10 to 18 mm. wide, lanceolate, acuminate, narrowed to the rounded base, more or less pilose on both surfaces; panicles 5 to 12 cm. long, the few, distant, racemes 0.8 to 2 cm. long, ascending or finally spreading; spikelets 3.6 mm. long, about 1 mm. wide, pointed; first glume scarcely one-third the length of the spikelet, hispid along the midnerve and margin; second glume shorter than the sterile lemma, 7-nerved, hispid, the hairs longer toward the summit and margin, the sterile lemma 5-nerved, hispidulous and along the margins hispid, bearing at either side of the midnerve a crateriform gland, these more prominent than in *P. pulchellum*, the sterile palea nearly as long as its lemma, hispidulous; fruit 2.4 mm. long, 0.7 mm. wide, elliptic, minutely stipitate.

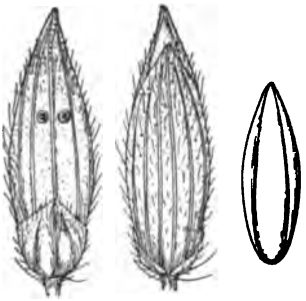


FIG. 117.—*P. biglandulare.* From type specimen.

In the original description of *P. biglandulare* the margins of the sheaths are described as "clothed with glands bearing branching hairs." The hairs are found to be simple and arising from papillæ.

DISTRIBUTION.

Among bushes, mountains of Mexico and Guatemala.

MEXICO: Near Pinabete, *Nelson* 3781.
GUATEMALA: Coban, *Tuerckheim* II 1956.

Parviglumia.—Plants erect or ascending, usually from a decumbent base; culms slender; sheaths densely ciliate and with a dense ring of pubescence at the summit; ligules less than 0.5 mm. long; blades firm, lanceolate, constricted into a very short petiole-like base, and having a thin, white, cartilaginous margin; panicles light green, with few, compactly flowered branches; spikelets not over 2 mm. long, obovate, obtuse, glabrous, the first glume usually about one-fifth the length of the spikelet; fruit, except in *P. parviglume*, with scattered, appressed, silky hairs.

Besides the three here given two Brazilian species belong in this group: *P. trichidiachne* Doell[a] and *P. schiffneri* Hack.,[b] and also *P. conchatum* Fourn.[c] described from a Mexican specimen.[d]

Blades 12 to 16 cm. long, 2 to 3 cm. wide; fruit glabrous..... 70. *P. parviglume.*
Blades not over 10 cm. long nor 1.8 cm. wide; fruit with scattered silky hairs.
  Blades scabrous on the upper surface, not falcate........ 68. *P. virgultorum.*
  Blades sparsely hispid on the upper surface, falcate...... 69. *P. schmitzii.*

---

[a] In Mart. Fl. Bras. **2**^{2}: 339. *pl. 49.* 1877.

[b] Denkschr. Math.-Naturw. Akad. Wiss. Wien **79**: 11. 1906.

[c] Mex. Pl. **2**: 25. 1886.

[d] See *P. conchatum* Fourn. page 329.

68. Panicum virgultorum Hack.

Panicum virgultorum Hack. Oesterr. Bot. Zeitschr. **51**: 369. 1901. "Costarica: in virgultis ad La Verbena prope Alajuelito leg. Tonduz (Pittier et Dur. Pl. costar. exs. nr. 8829) et ad rivulos prope tres Rios (Pittier ibid. nr. 4326)." The type, *Tonduz* 8829, is in Hackel's herbarium.

Tonduz[a] listed this species under the name "*Panicum oblongum* Hack." This was a herbarium name at first applied by Hackel to Tonduz's no. 8829, as shown by specimens in Hackel's herbarium and others distributed by Tonduz.

DESCRIPTION.

Plants perennial, ascending from a decumbent or sometimes a widely creeping base, branching and rooting at the lower, geniculate nodes; culms slender, wiry, 0.4 to 1 meter or more long, compressed, glabrous or pubescent below the nodes; nodes pubescent or glabrous; sheaths often as long as the internodes, usually short-ciliate, otherwise glabrous or the lowermost pubescent; ligules membranaceous; blades 5 to 10 cm. long, 5 to 10 mm. wide, narrowly lanceolate, acuminate, narrowed to the base, scabrous on the upper surface, smooth and glossy beneath; panicles mostly long-exserted, 2.5 to 7 cm. long, half to two-thirds as wide, the 2 to 4 branches ascending, compactly flowered except at the base, or the lower sometimes naked one-third its length, the short branchlets and pedicels pubescent; spikelets 1.6 mm. long, 0.9 mm. wide; first glume less than one-fourth the length of the spikelet; second glume and sterile lemma equal, 5-nerved; fruit 1.5 mm. long, 0.8 mm. wide, oval, smooth and shining but with sparse, long, appressed, silky hairs.

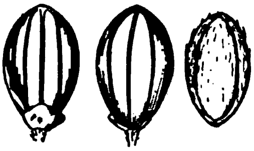


FIG. 118.—*P. virgultorum*. From type specimen.

DISTRIBUTION.

Hedgerows and cultivated fields, Guatemala and Costa Rica.

GUATEMALA: Dept. Huehuetenango, *Seler* 2708.
COSTA RICA: Alajuelita, *Tonduz* 8818, 8829.

69. Panicum schmitzii Hack.

Panicum schmitzii Hack. Ann. Naturhist. Hofm. Wien **17**: 254. 1902. No specimen nor locality is cited. The author states that the specimen was from Mexico and was sent him by Dr. Zahlbruckner for identification, having been communicated to the Hofmuseum by Schmitz, but that neither the name of the collector nor the date of collection was given. The type is in Hackel's herbarium.

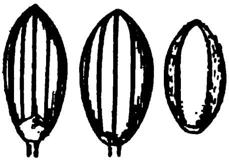


FIG. 119.—*P. schmitzii*. From type specimen.

DESCRIPTION.

Plants apparently perennial ascending, or erect from a long-jointed, creeping base, rooting and branching from the nodes of the decumbent portion, the suberect branches 20 to 45 cm. high, simple or nearly so; culms puberulent at least below the puberulent nodes; sheaths short, puberulent, at least toward the summit; ligules ciliate; blades 6 to 10 cm. long, 10 to 18 mm. wide, lanceolate, more or less falcate, narrowed to the rounded base, sparsely papillose-hispid on the upper surface, glabrous or with a few scattered papillæ or hairs beneath; panicles rather short-exserted, 4 to 8 cm. long, the few subracemose branches finally somewhat spreading, pubescent at the base, bearing short, appressed, approximate branchlets of crowded spikelets along the upper two-thirds to three-fourths of their length; spikelets 1.8 mm. long, 0.9 mm. wide; first glume scarcely one-fifth the length of the spikelet; second glume slightly longer than the sterile lemma, both 5-nerved; fruit 1.5 mm. long, 0.8 mm. wide, oval, the lemma sparsely clothed with appressed, silky hairs, the palea glabrous.

---

[a] Bull. Herb. Boiss. **3**: 450. 1895.

DISTRIBUTION.

Shaded rocky slopes, southern Mexico.

MEXICO: Las Canoas, San Luis Potosí, *Pringle* 3817.

70. Panicum parviglume Hack.

Panicum parviglume Hack. Oesterr. Bot. Zeitschr. 51: 429. 1901. "Costarica: in ripis fl. Rio Torres prope S. José (Pittier 9080), prope S. Francisco de Guadalupe (Tonduz, 2448)." The type, *Pittier* 9080, is in Hackel's herbarium.

DESCRIPTION.

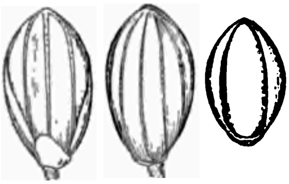


FIG. 120.—*P. parviglume*. From type specimen.

Culms slender, erect, from an ascending base, 100 cm. high, striate, sparsely papillose-pilose; sheaths exceeding the internodes, ciliate, sparsely papillose-pilose, striate, more densely pubescent at the juncture with the blade; ligules very short, ciliate; blades lanceolate or linear-lanceolate, 8 to 16 cm. long, 12 to 25 mm. wide, flat, firm, rounded at base, acuminate, sparsely hispidulous, especially above, the margin very scabrous; panicles ovate, 15 to 25 cm. long, the branches spreading or ascending, the lower distant, solitary, 10 to 12 cm. long, the lower fourth naked, bearded at base; branchlets appressed, the longer 1 to 2 cm. long, bearing 3 to 8 subcontiguous spikelets on slender, flexuous, scabrous pedicels 0.5 to 2 mm. long; spikelets oval, 2 mm. long, 1.2 mm. wide; first glume about one-fifth the length of the spikelet; second glume and sterile lemma equal, slightly exceeding the fruit, faintly 5-nerved, minutely apiculate; fruit smooth.

DISTRIBUTION.

Thickets along streams, southern Mexico and Costa Rica. The only complete specimen in the National Herbarium is Tonduz's no. 8448 from which the above description is drawn. This was collected by Tonduz and Pittier at San Francisco de Guadalupe, Costa Rica, "Buissons sur les bords du Rio Torres."

In the National Herbarium there is a panicle, with upper leaf, of a plant of this species, with the specimen of Botteri's no. 150, collected in Mexico. A similar fragmentary specimen is mixed with the same collection in the Gray Herbarium.

Verrucosa.—Glabrous annuals with weak, divaricately branching culms, decumbent at base and usually provided with aerial brace-roots at the lower nodes, the lower internodes much shorter than the middle and upper; ligules ciliate, not over 0.5 mm. long; panicles with divaricate, capillary branches, spikelet-bearing toward the ends; spikelets tuberculate; fruit minutely papillose, the margin of the lemma flat, inrolled only at base.

Spikelets about 2 mm. long, glabrous........................ 71. *P. verrucosum.*
Spikelets over 3 mm. long, hispid........................... 72. *P. brachyanthum.*

71. **Panicum verrucosum** Muhl.

Panicum debile Ell. Bot. S. C. & Ga. 1: 129. 1816, not Desf. 1798. No specimen nor locality is cited. The type was not found in the Elliott Herbarium but the description clearly identifies the species.

Panicum verrucosum Muhl. Descr. Gram. 113. 1817. "Habitat in N. Cæsarea, Delaware, et Georgia." The type is in the Muhlenberg Herbarium. On the sheet is written "verrucosum" but there is nothing to indicate from which of the three States cited the specimen came.

Panicum umbraculum Bosc; Spreng. Syst. Veg. 1: 314. 1825. This and the following are names found in the Willdenow Herbarium, on specimens collected by Bosc, and published as synonyms of *P. verrucosum* Muhl. Both belong to this species.

Panicum rugosum Bosc; Spreng. loc. cit.

DESCRIPTION.

Plants bright green, solitary or few together, lax, at first erect but soon decumbent at base, and ascending or widely spreading; culms slender, 20 cm. to 1.5 meters high; sheaths shorter than the internodes, ciliate; blades thin, lax, flat, 5 to 20 cm. long, 4 to 10 mm. wide, somewhat narrowed toward the base, gradually narrowed to the acuminate apex, glabrous; panicles finally exserted, 5 to 30 cm. long, about as wide, diffuse, small panicles often produced at the lower nodes, at least the ultimate branchlets scabrous, the branches mostly solitary, the branchlets bearing a few short-pediceled spikelets, mostly in twos, toward the ends; spikelets 1.8 to 2.1 mm. long, about 1 mm. wide, elliptic-obovate, subacute; first glume one-fourth the length of the spikelet or less; second glume and sterile lemma warty, glabrous, the glume shorter than the fruit at maturity; fruit 1.8 to 2 mm. long, 1 mm. wide, elliptic, acute.

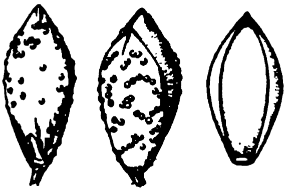


FIG. 121.—*P. verrucosum*. From type specimen.

DISTRIBUTION.

Wet, mostly shady soil, Atlantic Coastal Plain, Massachusetts to Florida and Texas; also in Indiana and Tennessee.

MASSACHUSETTS: Springfield, *Andrews* 23; Plymouth, *Oakes*.

NEW YORK: Staten Island, *Tyler* in 1898.

NEW JERSEY: Atsion, *Chase* 3546; Egg Harbor, *Scribner* in 1886, *Vasey* in 1884; Englishtown, *Pearce* in 1884.

PENNSYLVANIA: Tinicum, *Diffenbaugh* in 1868, *Smith* 99.

INDIANA: Dune Park, *Chase* 918, *Hill* 177 in 1898.

DELAWARE: Ellendale, *Commons* 231.

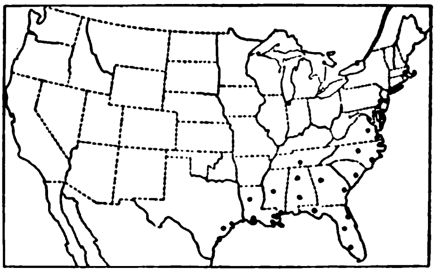


FIG. 122.—Distribution of *P. verrucosum*.

MARYLAND: Eastern Shore, *Canby*.

DISTRICT OF COLUMBIA: *Chase* 5440, *Dewey* 408, *Kearney* in 1895; *Steele* in 1896, *Ward* in 1878 and 1879.

VIRGINIA: Parksley, *Warburton* in 1903; Munden, *Mackenzie* 1671; Portsmouth, *Noyes* 84; Virginia Beach, *Britton* in 1895, *Hitchcock* 164, *Kearney* 2053; Suffolk, *Boettcher* 471; Dismal Swamp, *Chase* 3660.

North Carolina: West Raleigh, *Stanton* 1271; Swain County, *Beardslee & Kofoid* in 1891; Wilmington, *Ashe* in 1897.

South Carolina: Santee Canal, *Ravenel* (Gray Herb.).

Georgia: Sumter County, *Harper* 638; Thomson, *Bartlett* 1103; Stone Mountain, *Hitchcock* 216; Augusta, *Cuthbert* in 1903; without locality, *Latimer* in 1885.

Florida: Jacksonville, *Curtiss* 3608, 4036, 5252, 5808; Milton, *Chase* 4314; Orange County, *Baker* 31, *Combs* 1049, 1116, *Meislahn* 22a; Titusville, *Chase* 3986; Eustis, *Chase* 4066, *Nash* 780; Gainesville, *Chase* 4202; Braidentown, *Combs* 1269, 1294; Bartow, *Combs* 1234; without locality, *Rugel* 598.

Tennessee: Nashville, *Gattinger* in 1882.

Alabama: Cullman County, *Eggert* 59; Auburn, *Earle & Baker* in 1897.

Mississippi: Nicholson, *Kearney* 379; Waynesboro, *Kearney* 120; Biloxi, *Kearney* 336 in part, *Tracy* 4562; Pass Christian, *Langlois* 35 in 1882.

Louisiana: Oberlin, *Ball* 204; Lake Charles, *Chase* 4424.

Texas: Jefferson, *Plank* 30 (Hitchcock Herb.).

72. Panicum brachyanthum Steud.

Panicum brachyanthum Steud. Syn. Pl. Glum. **1**: 67. 1854. The only specimen cited is, "*Vinzent* Coll. nr. 124. Texas." The type, in the Paris Herbarium, is labeled "In sabulosis sylvaticis, Texas, prope coloniam Rusk County, Vincent coll. 124."

Panicum sparsiflorum Vasey, U. S. Dept. Agr. Div. Bot. Bull. **8**: 36. 1889, not Doell, 1877. Vasey cites "(P. angustifolium, *Chap.* non *Ell.*)," gives a description, and follows with the range "South Carolina to Texas." As this is not primarily a change of name, the type is one of the specimens which Vasey had before him when he wrote the description. From among those in the National Herbarium upon which Dr. Vasey has written the name, we have chosen as the type one collected in dry soil at San Bernardino, Texas, October, 1839, by Dr. Ridell, no. 20. This was first named by Dr. Vasey, *P. angustifolium* Ell. The authority, "Ell.," was changed to "Chap. non Ell." No specimens from South Carolina can be found named *P. sparsiflorum* by Vasey nor is the species known from that State.

DESCRIPTION.

Plants weakly ascending or spreading from a decumbent base, freely branching from the lower nodes; culms slender, 30 cm. to 1 meter high; sheaths shorter than the internodes, minutely ciliate; blades 5 to 15 cm. long, 2 to 3 mm. wide, narrowed toward the base, often involute and scabrous toward the apex, the uppermost usually reduced; panicles finally exserted, 5 to 15 cm. long, about as wide, the branches few, scabrous, the lower sometimes as much as 10 cm. long, bearing a few short-pediceled spikelets, mostly in twos, toward the ends; spikelets 3.2 to 3.6 mm. long, 1.5 mm. wide, elliptic-obovate, abruptly pointed; first glume minute; second glume and sterile lemma subequal, the tubercles bearing stiff, spreading hairs; fruit 2.9 to 3 mm. long, 1.4 mm. wide, obovate-elliptic, subacute.

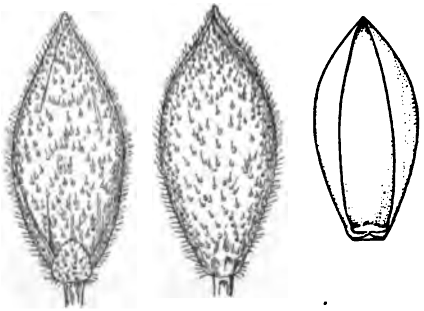


Fig. 123.—*P. brachyanthum*. From type specimen.

DISTRIBUTION.

Sandy soil, Louisiana, Texas, and Oklahoma.

Louisiana: Oberlin, *Ball* 220; Lake Charles, *Chase* 4389; without locality, *Hale* (Hitchcock Herb.).

Texas: Jacksonville, *Joor* in 1884, *Plank* 22, 60; Grand Saline, *Reverchon* 2223; Paris, *Heller* 4221; College Station, *Nealley* in 1882; Galveston, *Joor* 3648; Industry, *Wurzlow* 9; Marshall, *Bush* 979; Tyler, *Reverchon* 2224; Harvester, *Thurow* in 1898; without locality, *Nealley* in 1885.

Oklahoma: Sapulpa, *Bush* 738 (Gray Herb.).

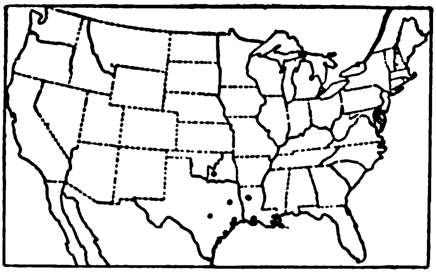


Fig. 124.—Distribution of *P. brachyanthum*.

Trichoidia.—Annuals, decumbent at base and rooting at the lower nodes, rather freely branching; blades oblong-lanceolate to ovate; panicles short-exserted or included at base until maturity, very diffuse, the numerous branches, branchlets and long pedicels capillary; spikelets minute, not over 1.4 mm. long; fruit minutely papillose, the margin of the lemma flat.

Blades more than one-fourth as wide as long; spikelets pubescent .... 73. *P. trichoides.*

Blades less than one-eighth as wide as long; spikelets minutely bullate-rugose .... 74. *P. trichanthum.*

73. Panicum trichoides Swartz.

Panicum trichoides Swartz, Prodr. Veg. Ind. Occ. 24. 1788. "*Jamaica, Hispaniola.*" Swartz cites Sloane's plate 72, figure 3, but does not quote his diagnosis, hence the type [a] is not the Sloane plant, which belongs to the same species, but the plant in the Swartz Herbarium labeled "trichoides fl. ind. occ." from "Jamaica, Swartz."

Panicum capillaceum Lam. Tabl. Encycl. **1**: 173. 1791. Lamarck gives for the locality "Amer. merid." and cites Sloane's plate 72, figure 3. The type, in the Lamarck Herbarium, was collected in Porto Rico by Le Dru. Persoon,[b] while quoting Lamarck's diagnosis, gives the name as "*Capillaceum* (*filamentosum*)." The second word does not seem to be meant either as a change of name or as a variety. What the author intended is not apparent.

Panicum acutifolium Willd.; Spreng. Syst. Veg. **1**: 320. 1825. This is given as a synonym under *P. capillare* and is credited to "W. herb." The type, in the Willdenow Herbarium, was collected by Humboldt at Cumanacoa.

Panicum capillaceum strictius Doell in Mart. Fl. Bras. **2**^{2}: 249. 1877. "*In Prov. Piauhyensi* (*Gardner n. 3509*)." This specimen we have not seen.

This species has usually been referred by authors of American floras to *P. brevifolium* L., which is from India, and is the same as *P. ovalifolium* Poir. as described by Hooker,[c] and a very different species.

---

[a] See Hitchcock, Contr. Nat. Herb. **12**: 140. 1908.

[b] Syn. Pl. **1**: 83. 1805.

[c] Fl. Brit. Ind. **7**: 44. 1896.

DESCRIPTION.

Plants often widely spreading; culms ascending from a decumbent base, the ascending portion 20 to 40 cm. high, rather slender, leafy, pubescent; sheaths short, but sometimes overlapping toward the summit and on the branches, ciliate and papillose-hirsute, at least toward the summit; ligules membranaceous-ciliate, scarcely 0.5 mm. long; blades spreading, thin, 2 to 6 cm. long, 1 to 2 cm. wide, ovate or ovate-lanceolate, somewhat unsymmetrical, acuminate, cordate and somewhat clasping at the ciliate base, glabrous or sparsely hirsute on both surfaces; panicles oval or ovate in outline, 5 to 20 cm. long, nearly as wide, the axis sparsely pilose, the numerous branches and branchlets and the long pedicels capillary; spikelets 1.2 to 1.3 mm. long, about 0.5 mm. wide, obovate-elliptic, sparsely hirsute; first glume about half the length of the spikelet, acute, 1-nerved; second glume shorter than the sterile lemma, both 3-nerved, and at maturity sometimes ruptured by the expanding fruit, often only the lower part of each remaining; fruit at maturity 1.3 mm. long, 0.6 mm. wide, elliptic, minutely papillose while immature, becoming smooth but not polished.

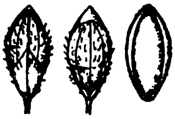


FIG. 125.—*P. trichoides.* From type specimen.

DISTRIBUTION.

Woods and open ground, often a weed in cultivated soil, Mexico and the West Indies, south to Ecuador and Brazil.

MEXICO: Imala, *Palmer* 1758 in 1891; Manzanillo, *Palmer* 1083 in 1890; Acapulco, *Palmer* 287 in 1895; Guadalajara, *Pringle* 3828; Guatulco, *Liebmann* 317; Zacualpan, *Purpus* 2902; Córdoba, *Finck* in 1893; La Correa, *Langlassé* 380; Coahuayutla, *Emrick* 53; Tabasco, *Rovirosa* 434; San Juan Bautista, *Rovirosa* 598; Yucatan, *Gaumer* 522; Tres Marias Islands, *Nelson* 4257.

GUATEMALA: Santo Thomas, *Deam* 6041; Dept. Santa Rosa, *Heyde & Lux* 4299; El Palmar, *Kellerman* 6263; Alta Vera Paz, *Tuerckheim* 7801.

HONDURAS: *Wilson* 188 (Field Mus. Herb.).

SALVADOR: San Salvador, *Velasco* in 1906.

COSTA RICA: Nicoya, *Cooper* 10379; Matina, *Pittier* 9754; Buenos Aires, *Pittier* 3651, *Tonduz* 4865; San José, *Tonduz* 3123; without locality, *Pittier* 4458, 16081.

CUBA: Habana, *Curtiss* 714.

JAMAICA: Port Antonio, *Fredholm* 3282.

PORTO RICO: Mayaguez, *Cowell* 522, 583, *Sintenis* 160; Ponce, *Heller* 6094; Luquillo Mountains, *Wilson* 283; Martin Peña, *Heller & Heller* 387; Cayey, *Heller & Heller* 531; Mount Morales, *Britton & Cowell* 444; Rio Piedras, *Barrett* 61; Santurce, *Heller & Heller* 157.

LEEWARD ISLANDS: St. Christopher, *Britton & Cowell* 295; Dominica, *Eggers* in 1881; Guadeloupe, *Duss* 2681.

WINDWARD ISLANDS: Martinique, *Duss* 1321, *Hahn* 1047; Granada, *Broadway* in 1905, *Eggers* 5987.

COLOMBIA: State of Magdelena, *Pittier* 1621; Calí, *Pittier* 971; Santa Marta, *Smith* 167.

VENEZUELA: Tovar, *Fendler* 2499.

TRINIDAD: "Ex herb. W. Mitten," collector not given.

BRITISH GUIANA: Demerara, *Jenman* 4403.

BRAZIL: Para, *Spruce* 466 (Panicum 13); without locality, *Burchell* 8706.

ECUADOR: Balao, *Eggers* 14481; El Recreo, *Eggers* 15417.

74. **Panicum trichanthum** Nees.

? *Milium microspermum* Lag. Gen. & Sp. Nov. 2. 1816. "Habitat in Nova Hispania. Semina communicavit perill. *D. Sessé.*" We have not seen the type specimen and the short description applies equally well to *P. trichoides*. Fournier[a] gives this as equivalent to *P. trichanthum* Nees.

Panicum trichanthum Nees, Agrost. Bras. 210. 1829. "*Habitat in Brasilia aequatoriali* (*Siber.—Vidi in Herb. Reg. Berol.*) *In regno Mexicano* (*ab Humboldt, Haenke.*) (*Vide in Herb. Willd. et Haenk.*)" Nees's first citation, however, following the diagnosis and preceding his discussion of this and *P. trichoides* is as follows: "Panicum tricho[i]des, *Humb. et K.* * * * (*fide Herb. Willd.*)" While Nees's description distinguishes carefully between this species and *P. trichoides*, there is some confusion as to the specimens mentioned, since some are referable to *P. trichanthum* and some to *P. trichoides*. The specimen in the Willdenow Herbarium marked "*P. trichanthum*" in Nees's writing, which appears to be the specimen referred to as that of "Humb. et K.," is accepted as the type.

Panicum guayaquilense Steud. Syn. Pl. Glum. 1: 85. 1854. "*Jameson* Hrbr. nr. 560, Guayaquil." The type, in the Steudel Herbarium, is labeled "Savannis Guayaquilensibus."

Panicum microspermum Fourn.; Hemsley, Biol. Centr. Amer. Bot. 3: 492. 1885. "*Panicum trichoides* [Swartz, misapplied by] Ch. et Schl. in Linnæa, VI. p. 33" and "*Panicum trichanthum* Nees Agrostol. Bras. p. 210," are cited as synonyms, no description being given. Schlechtendal and Chamisso[b] give without description *P. trichoides* Swartz as the name of Schiede & Deppe's no. 894, the specimen of which, in the Berlin Herbarium, is referable to *P. trichanthum*. *Panicum microspermum* as used by Hemsley, then, must be considered as based on *P. trichanthum* Nees. Fournier[a] later describes the species under the name *P. microspermum* Fourn., citing as synonyms the names given by Hemsley and also "*Milium microspermum* Lag.," which, since Fournier takes up Lagasca's specific name, would be the basis of Fournier's name as published by himself. While the identity of *M. microspermum* is doubtful all the specimens cited by Fournier are referable to *P. trichanthum*.

DESCRIPTION.

Plants often in large bunches; culms ascending from a decumbent base, as much as 1 to 2 meters long, rather stout, glabrous; sheaths shorter than the internodes, ciliate, and usually with a villous ring at the juncture with the blade, otherwise glabrous or rarely pubescent toward the summit; ligules membranaceous, less than 0.5 mm. long; blades oblong-lanceolate, usually 10 to 15 cm. long, 10 to 15 or rarely 25 mm. wide, cordate, rather strongly nerved, glabrous or puberulent, often pilose above the ligule; panicles 10 to 30 cm. long, the axis glabrous, the numerous branches and branchlets and the long pedicels capillary, flexuous; spikelets 1.2 to 1.4 mm. long, 0.6 mm. wide, obovate-fusiform, acute; first glume less than one-fifth the length of the spikelet; second glume shorter than the sterile lemma, both 3-nerved and under a lens minutely bullate-rugose, often ruptured and breaking off as the fruit matures, as in *P. trichoides;* fruit 1.2 mm. long, 0.6 mm. wide.

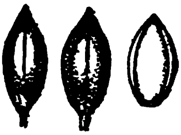


FIG. 126.—*P. trichanthum*. From Fendler's no. 1643.

---

[a] Mex. Pl. 2: 22. 1886.

[b] Linnaea 6: 33. 1831.

DISTRIBUTION.

Thickets, river banks and rocky slopes, Mexico, the West Indies, and south to Paraguay.

MEXICO: Colima, *Palmer* 1257 in 1891; Colipa, *Liebmann* 432; Jicaltepec, *Liebmann* 320; Vera Cruz, *Müller* 2172 in part; San Luis Potosí to Tampico, *Palmer* 1151 in 1879.

GUATEMALA: Alta Vera Paz, *Lewton* 377, *Tuerckheim* 7798; Gualan, *Deam* 424; Morales, *Kellerman* 6272.

HONDURAS: San Pedro Sulá, *Thieme* 5587 in part.

COSTA RICA: Talamanca, *Tonduz* 8600, 8670.

PANAMA: Bocas del Toro, *Hart* 87.

CUBA: Trinidad, *Wright* 753; Romelie, *Eggers* 5350; Vento, *Curtiss* 598, *León* 557.

JAMAICA: *Purdie* (Gray Herb.).

PORTO RICO: Cayey, *Sintenis* 2471.

COLOMBIA: Santa Marta, *Smith* 2151.

VENEZUELA: Tovar, *Fendler* 1643.

BRAZIL: Without locality, *Burchell* 7062, 8791, *Riedel* 1360.

PARAGUAY: *Morong* 317, 1571.

Urvilleana.—Perennials with large, densely villous spikelets, the fertile lemma clothed with long hairs on the margin. A South American group of two or three species, of which one extends into the desert region of the southwestern United States.

75. Panicum urvilleanum Kunth.

Panicum megastachyum Presl, Rel. Haenk. 1: 305. 1830, not Nees 1826. "*Hab. in montanis Peruviae huanoccensibus.*" The type specimen, labeled "Panicum megastachyum Presl. Peruana montano guanoccensis. Haenke," is in the herbarium of the Bohemian Museum.

Panicum urvilleanum Kunth, Rév. Gram. 2: 403. *pl. 115.* 1830. Kunth gives no definite locality other than "Crescit in regno Chilensi." The name is listed with the citation "Chili: Legit amiciss. Dumont D'Urville," but without description, in an earlier part of the same work.[a] The type specimen, in the Berlin Herbarium, is labeled "Conception de Chili, D'Urville ded 1815."

Panicum preslei Kunth, Enum. Pl. 1: 121. 1833. Based on "P. megastachyum *Presl*," the name is presumably changed because of *P. megastachyum* Nees. Presl's description is copied, Kunth evidently not having seen the plant.

Panicum urvilleanum longiglumis[*e*] Scribn. U. S. Dept. Agr. Div. Agrost. Bull. 17: (ed. 2). 49. 1901. "San Jacinto, Southern Calif. No. 887. S. B. & W. F. Parish, June, 1882." The type specimen, in the National Herbarium, has spikelets about 7 mm. long.

DESCRIPTION.

Plants robust, erect from a creeping rootstock, 0.5 to 1 meter high, culms solitary or few in a tuft, simple or branching at the base only, the nodes densely bearded, rarely visible; sheaths overlapping, loose, densely, retrorsely, harshly villous; ligules densely ciliate, about 2 mm. long; blades 30 to 60 cm. long, 4 to 7 mm. wide, tapering from a flat base to a long involute-setaceous point, retrorsely strigose to nearly glabrous on both surfaces; panicles short-exserted, equaled or exceeded by the upper blades, 25 to 30 cm. long, about half as wide, rather many-flowered, the glabrous to pilose, slender, flexuous branches ascending, producing spikelet-bearing branchlets along the upper half to two-thirds of their length; spikelets short-pediceled, 6 to 7 mm. long, about 2 mm. wide, and as much as 4 mm. thick, ovate, densely silvery to tawny villous, strongly nerved but the nerves obscured by the pubescence; first glume clasping, two-thirds to nearly as long as the spikelet, sparsely villous or glabrescent toward the acuminate apex; second glume slightly longer and more pointed than the sterile lemma, both exceeding the fruit, the lemma inclosing a villous palea of equal length and a staminate flower; fruit 4.2 to 4.5 mm. long, about 1.6 mm. wide, the margins of the lemma clothed with long white hairs, otherwise smooth and shining.

---

[a] Op. cit. 1: 35. 1829.

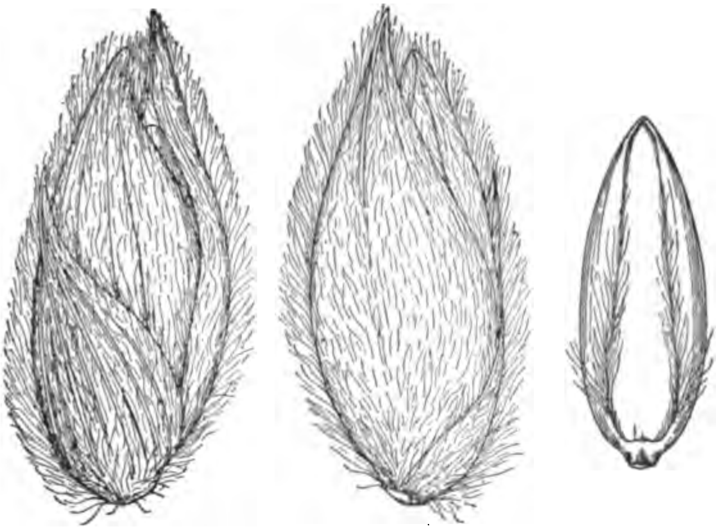


FIG. 127.—*P. urvilleanum.* From type specimen.

DISTRIBUTION.

Sandy deserts, Arizona and southern California south to Argentina.

ARIZONA: Without locality, *Lemmon* in 1884.

CALIFORNIA: San Jacinto, *S. B. & W. F. Parish* 887 in 1882; Agua Caliente, *S. B. & W. F. Parish* 887 in 1881; Barstow, *Chase* 5766, *Tracy* 434; Hesperia, *Abrams* 2164; Colorado Desert, *Chase* 5519, *Parry & Lemmon* 400 (Hitchcock Herb.), *Wilder* 1082.

ARGENTINA: Rio Negro, *Wilkes* S. Pac. Expl. Exped. in 1838–1842.

CHILE: *Gillies* (Gray Herb.).

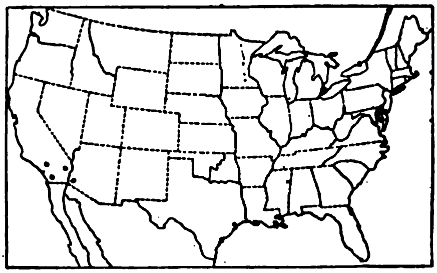


FIG. 128.—Distribution of *P. urvilleanum.*

UNGROUPED SPECIES OF TRUE PANICUM.

The following tropical species do not fall into any of the foregoing natural groups nor, with the exception of *Panicum rudgei* and *P. rotundum,* which are allied species, do they form such groups among themselves. The Mexican and Central American species are as yet not so well understood as those of the United States, and further study is necessary before our knowledge of the species of the former regions shall be as detailed as that of the species occurring north of the Mexican boundary. This study awaits additional material and extended field work in Mexico and Central America.

76. Panicum costaricense Hack.

Panicum costaricense Hack. Oesterr. Bot. Zeitschr. **51**: 428. 1901. "Costarica: Inter Buenos Aires et Térraba (Pittier 3636); in silva prope Térraba (3673), in virgultis ad Rio Ceibo (4860)." The first specimen cited, which is taken as the type, is in the Brussels Herbarium, and was examined by Hackel, but is not in his own herbarium. The two other specimens are in Hackel's herbarium.

DESCRIPTION.

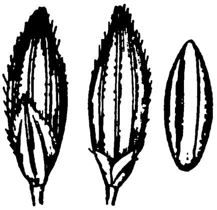


FIG. 129.—*P. costaricense.* From type specimen.

Plants apparently annual; culms slender, erect, 0.5 to 1 meter high, sparingly branched, striate, glabrous or minutely pubescent; sheaths much shorter than the elongated internodes, papillose-pilose to glabrate, ciliate at least toward the summit; ligules membranaceous, ciliate, about 0.5 mm. long; blades 5 to 10 cm. long, 6 to 12 mm. wide, narrowed toward the base, long-acuminate, very sparsely pilose on both surfaces or glabrate; panicles ovoid in outline, 10 to 15 cm. long, about two-thirds as wide, loosely flowered, the slender, flexuous branches ascending or spreading, bearing delicate branchlets throughout, the scattered spikelets on capillary, flexuous pedicels; spikelets 2.4 mm. long, 0.7 mm. wide, elliptic, acute, rather strongly nerved; first glume nearly half the length of the spikelet, acute, hirsute toward the margin; second glume and sterile lemma subequal, pointed beyond the fruit, hirsute toward the margin and with very minute papillæ bordering the nerves; fruit 1.7 mm. long, 0.6 mm. wide, elliptic, smooth and shining, the margins of the lemma near the base each bowed out into a little angle, giving a somewhat auricled appearance.

The somewhat auricled base of the fruit in this species suggests an approach to species of Ichnanthus.

DISTRIBUTION.

Forests, Costa Rica.

COSTA RICA: Buenos Aires, *Pittier* 3661, *Tonduz* 4860; Cordoncillal, *Pittier* 3640; Boruca, *Pittier* 4626; Térraba, *Tonduz* 3673.

Panicum expansum Fourn.,[a] the type specimen of which, Liebmann's no. 426 from Huitamalco, Mexico, in the Copenhagen Herbarium, was examined at Halle, is apparently closely related to *P. costaricense.* The fruit has the same auricled or angled base, but the spikelets are slightly larger and glabrous, and the blades are glabrous. Liebmann's no. 427 in the same herbarium is the only other specimen of this species we have seen. For the satisfactory placing of this species more material is needed.

77. Panicum parvifolium Lam.

Panicum parvifolium Lam. Tabl. Encycl. **1**: 173. 1791. The only specimen mentioned is "Ex Amer. merid. *Communic. D. Richard.*" The type, in the Lamarck Herbarium, labeled, "ill. gen. ex D. Richard," is a single slender culm.

Panicum brasiliense Spreng. Syst. Veg. **1**: 321. 1825. "*Brasil.* (P. ascendens W. herb.)" In the Willdenow Herbarium is a specimen of *P. parvifolium* labeled, "Panicum adscendens. Brasil. Hoffmansegg," which is evidently the specimen referred to by Sprengel, and is the type of *P. brasiliense.*

Panicum ascendens Willd.; Spreng. Syst. Veg. **1**: 321. 1825. This is given as a synonym of *P. brasiliense* of which it is a typonym.

Panicum adscendens Hoffmgg.; Ind. Kew. **2**: 410. 1894. This is listed with the reference "ex Schult. Mant. 2: 592," but this is evidently an error, since the Mantissa volume 2 contains but 522 pages in all the copies we have seen. The type is undoubtedly the Hoffmansegg specimen mentioned above.

---

[a] Mex. Pl. **2**: 26. 1886.

Panicum oplismenoides Nash, Bull. Torrey Club **30**: 381. 1903, not Hack. 1888. "Collected on the edge of a ditch at Vega Baja, May 9, 1899, by Heller, no. 1316." The type is in the herbarium of the New York Botanical Garden.

DESCRIPTION.

Plants perennial, cespitose, decumbent or creeping, rooting at the lower nodes, glaucous and glabrous throughout, except as noted; culms slender, branching, 20 to 80 cm. long, leafy, with numerous short internodes, the nodes sometimes sparsely pilose; sheaths rarely over 1 cm. long, ciliate, and sometimes, especially on young shoots, sparsely pilose; ligules nearly obsolete; blades 1 to 3 cm. long, 2 to 6 mm. wide, oblong-lanceolate, rounded or subcordate at base, spreading or reflexed, or the upper and often those of young shoots appressed, sometimes sparsely pilose at the base; panicles short-exserted, 2 to 4 cm., rarely 6 cm. long, about as wide, loosely flowered, the slender, flexuous branches spreading, the branchlets and pedicels divergent; spikelets about 1.5 mm. long, 0.8 mm. wide, turgid, blunt, glabrous; first glume slightly more than half the length of the spikelet, subacute, 3-nerved; second glume and sterile lemma subequal, 5-nerved, the sterile palea nearly as long as its lemma; fruit 1.4 mm. long, 0.8 mm. wide, ovate, smooth and shining.

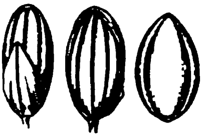


FIG. 130.—*P. parvifolium*. From type specimen.

DISTRIBUTION.

Damp shady places, Costa Rica and the West Indies, south to Brazil and Paraguay.

COSTA RICA: Buenos Aires, *Pittier* 10594, *Tonduz* 3631.

CUBA: Los Almacigos, *Wright* 3458; Herradura, *Baker* 2078, *Hitchcock* 181, *Tracy* 9060, 9079.

PORTO RICO: *Sintenis* 5719, 1216 (Krug & Urban Herb.); Vega Baja, *Heller & Heller* 1316.

TRINIDAD: *Broadway* 2372.

BRITISH GUIANA: *Schomburgk* 407.

DUTCH GUIANA: Surinam, no collector given (Gray Herb.).

FRENCH GUIANA: No data (Gray Herb.).

BRAZIL: Falls of St. Gabriel, *Spruce* 2207; Santarem, *Spruce* 632; São Paulo, *Löfgren* 1124; Campinas, *Novaes* 1245; without locality, *Riedel* 958.

PARAGUAY: *Morong* 519.

78. Panicum millegrana Poir.

Panicum hirsutum Lam. Encycl. **4**: 741. 1798, not Swartz, 1797. "Cette plante croît à Cayenne, d'ou elle a été envoyée par le citoyen Leblond." The type, in the Paris Herbarium, labeled "Cayenne, Le Blond," has glabrous spikelets.

Panicum millegrana Poir. in Lam. Encycl. Suppl. **4**: 278. 1816. "Cette plante croît dans l'Amérique méridionale (*V. s. in herb. Desfont*)." This specimen was not found in the Desfontaine Herbarium at Florence. In the Paris Herbarium is a specimen from "Cayenne, Martin," labeled "Panicum millegrana Poir.," which appears to be authentic and may be the type. Poiret's description applies well to this plant and to the species known as *P. rugulosum* Trin. The spikelets are glabrous as in the type of that species.

Panicum rugulosum Trin. Gram. Pan. 195. 1826. "Brasil (LANGSDORFF.)" The type, in the Trinius Herbarium, has glabrous spikelets.

Panicum sellowii Nees, Agrost. Bras. 153. 1829. "*Habitat in Brasilia meridionali.* (*Sellow*)." The type, in the Berlin Herbarium, has spikelets densely papillose-pubescent with short, stiff hairs.

Panicum beyrichii Kunth, Rév. Gram. **2**: 231. *pl. 27.* 1830. "Crescit in nemoribus prope novum Triburgum Brasiliæ." Kunth states that he received the plant under the name *P. sellowii* Nees from Beyrich who collected it. The type, in the Berlin Herbarium, has glabrous spikelets as in the type of *P. millegrana.*

Panicum lasianthum Trin. Gram. Icon. **3**: *pl. 245.* 1830. Trinius states that the figure is "ad specimen Brasilianum." The type, in the Trinius Herbarium, collected in Brazil by Langsdorff, has papillose-hispid spikelets.

Panicum puberulum Trin. Mém. Acad. St. Pétersb. VI. Sci. Nat. **1**: 277. 1834, not Kunth, 1829. Trinius states that his specimen is from Brazil. The type, in the Trinius Herbarium, collected in Brazil by Sello, has papillose-hispid spikelets as in the type of *P. sellowii.*

Panicum dispersum Trin. Mém. Acad. St. Pétersb. VI. Sci. Nat. **1**: 282. 1834. Trinius gives the locality as "Bahiens." The type, in the Trinius Herbarium, collected in Bahia, Brazil, by Riedel in 1831, is a prostrate or decumbent plant with glabrous spikelets.

Panicum expansum Trin.; Steud. Nom. Bot. ed. 2. **2**: 256. 1841. This is a nomen nudum credited to "Trin. *mpt.* Mexico." The type, in the Trinius Herbarium, labeled "Mexico, Hacienda Laguna, Schiede," has glabrous spikelets. This is not the *P. expansum* of Fournier[a] who cites Trinius's name as a synonym under *P. rugulosum.*[b]

Panicum pilosum leiogonum Rupr. Bull. Acad. Roy. Belg. **9**^{2}: 239. 1842. This name is listed without description. The only specimen mentioned is *Galeotti* 5728 from Xalapa, Mexico. The type is in the Brussels Herbarium. This name is given by Fournier[a] as a synonym under *P. rugulosum,* but Galeotti's no. 5728 he cites[c] also under *P. pilosum genuinum.*

Panicum sellowii longevaginatum Rupr. Bull. Acad. Roy. Belg. **9**^{2}: 239. 1842. Under this name, which is listed without description, Ruprecht cites two specimens, *Galeotti* 5726 and 5699. The first has glabrous, the second hispid spikelets. This name is given by Hemsley[d] and Fournier[e] as a synonym under *P. rugulosum.*

Panicum valenzuelanum Rich. in Sagra, Hist. Cuba **11**: 304. 1850. "Crescit in locis montosis partis occidentalis insulae Cubae *Vuelta de abajo* dictae * * * (*Don José María Valenzuela*)." The type, in the Richard Herbarium, labeled "Vuelta de Abajo (Valenzuelana)," has papillose-hispid spikelets.

Panicum probandum Steud. Syn. Pl. Glum. **1**: 76. 1854. Based on "P. puberulum *Trin.* non *Kunth.*"

Panicum rugulosum hirtiglume Griseb. Cat. Pl. Cub. 233. 1866. The only specimen cited is *Wright* 3455. The type, in the Grisebach Herbarium, has hispidulous spikelets.

Panicum rugulosum glabrescens Doell in Mart. Fl. Bras. **2**^{2}: 259. 1877. As no specimen is mentioned, *P. beyrichii* Kunth, the first synonym cited, is taken as determining the type.

Panicum rugulosum pubescens Doell in Mart. Fl. Bras. **2**^{2}: 259. 1877. No specimen is mentioned. The type of the first synonym cited, *P. rugulosum* Trin., has glabrous spikelets, while Doell describes his variety as having puberulent glumes, hence the type of the second synonym cited, *P. sellowii* Nees, which has hispid spikelets, is taken as the type.

---

[a] Mex. Pl. **2**: 26. 1886.

[b] Op. cit. 21.

[c] Op. cit. 24.

[d] Biol. Centr. Amer. Bot. **3**: 495. 1885.

[e] Mex. Pl. **2**: 21. 1886.

Panicum rugulosum subvelutinum Doell in Mart. Fl. Bras. 2^2: 259. 1877. "*A cl. Wullschlaegel (n. 1612) in Surinamiae districtu Paraënsi lecta.*" We have not seen this specimen but the description, "foliorum lamina utrinque subvelutina," would indicate the form with velvety blades.

DESCRIPTION.

Plants perennial, spreading; culms sparingly branching, 0.5 to 1 meter high, ascending from a decumbent base, softly pubescent to glabrous; sheaths ciliate and with a dense ring of pubescence at the summit, otherwise papillose-pilose to glabrous; ligules membranaceous, scarcely 0.3 mm. long; blades ascending or spreading, thin, ovate-lanceolate, 4 to 15 cm. long, 10 to 30 mm. wide, somewhat unsymmetrical at the rounded or slightly cordate, sometimes ciliate, base, softly pubescent, or sometimes velvety, on both surfaces to glabrate except near the margin and at the base; panicles short-exserted, finally loose and rather few-flowered, 10 to 20 cm. long, about two-thirds as wide when expanded, the rather few, slender, branches stiffly ascending or spreading, bearing toward the ends short, appressed branchlets with 1 to 3 rather short-pediceled spikelets; spikelets 2 to 2.3 mm. long, 1 to 1.2 mm. wide, obovate, obtuse, turgid, at maturity olivaceous or brown, glabrous or more commonly papillose-hispidulous; first glume about two-thirds as long as the spikelet, acute; second glume slightly shorter than the sterile lemma, exposing the summit of the fruit at maturity, both 5-nerved, in glabrous spikelets the nerves bordered by interrupted rows of minute papillæ; fruit 1.9 to 2.1 mm. long, about 1 mm. wide, elliptic, obscurely pointed, papillose-roughened, becoming dark brown at maturity.

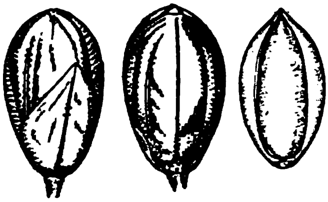


FIG. 131.—*P. millegrana*. From type specimen of *P. rugulosum* Trin.

This species as here defined is very variable. The examination of a greater number of specimens and field study may show *P. sellowii* to be distinct from *P. millegrana*. From the material at hand they can not be satisfactorily separated, for while most of the specimens have either glabrous or papillose-hispidulous spikelets a few have both sorts in the same panicle, and the pubescence of the sheaths and blades can not be correlated with that of the spikelets.

The following specimens have glabrous spikelets: *Fendler* 1641, *Heyde & Lux* 3927, *Holway* 3083, *Liebmann* Pl. Mex. 275, *Löfgren* 1228, *Regnell* III 1359**, *Riedel*, *Rusby* 233, *Smith* 2146, *Widgren* in 1844.

In *Spruce* 603 and *Tuerckheim* 657 most of the spikelets are glabrous but some in the same panicle are hispidulous, while in *Wright* 3455 the greater number of the spikelets are hispidulous but glabrous ones are found in the same panicle.

DISTRIBUTION.

Damp woods, Mexico and Cuba, south to Brazil.

MEXICO: Mirador, *Liebmann* 275; Jalapa, *Holway* 3083; State of Chiapas, *Heyde & Lux* 3927.

GUATEMALA: Dept. Alta Vera Paz, *Tuerckheim* 657, 8783, 8784.

COSTA RICA: El General, *Pittier* 10615.

CUBA: Habana, *Wright* 3462 in part; La Catalina, *Wright* 3455; Pinar del Rio, *Wright* 3855; Herradura, *Hitchcock* 180, *Tracy* 9098.

COLOMBIA: Santa Marta, *Smith* 2146.

VENEZUELA: Tovar, *Fendler* 1641.

BRAZIL: Campinas, *Novaes* 1249; São Paulo, *Löfgren* 1228; Rio Janeiro, *Widgren* in 1844; Prov. Minas Geraes, *Regnell* III 1359**; Santarem, *Spruce* 603; Madeira, *Rusby* 233; without locality, *Burchell* 4146, 4315-2, 4653, *Riedel*.

PARAGUAY: Laguna Ipacarary, *Fiebrig* 561 (Field Mus. Herb.).

79. Panicum glutinosum Swartz.

Panicum glutinosum Swartz, Prodr. Veg. Ind. Occ. 24. 1788. "*Jamaica.*" The type is in the Swartz Herbarium.

Panicum obtusiflorum Rich. in Sagra, Hist. Cuba **11**: 305. 1850. "Crescit ad marginem rivuli *Cauta* in provincia *Santiago de Cuba*. (Linden, n. 2143.)" The type, in the Richard Herbarium, is labeled "St. Yago de Cuba. Linden 2143."

Panicum lindenii Griseb. Cat. Pl. Cub. 233. 1866. Based on "*P. obtusiflorum* Rich. Cub. non Hochst. [1851]; Lind[en]. 2143."

DESCRIPTION.

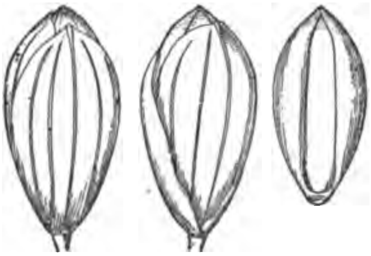


Fig. 132.—*P. glutinosum*. From type specimen.

Plants perennial, somewhat glaucous; culms erect from a geniculate or decumbent base, often rooting at the lower nodes, 1 to 2 meters high, robust, compressed, glabrous; sheaths often longer than the internodes, somewhat keeled, especially the lower, glabrous or sometimes pilose, densely bearded at the juncture with the blade; ligules obsolete; blades elongated-lanceolate, acuminate, 15 to 50 cm. long, 15 to 25 mm. wide (the uppermost reduced), abruptly or gradually narrowed at the base, more or less ciliate along the lower portion, glabrous or sometimes very sparsely pilose; panicles rhomboid in outline, 15 to 30 cm. long, about as wide, the lower branches verticillate, nearly as long as the main axis, stiffly ascending, the axis and branches glabrous, sometimes viscid, bearded in the axils, bearing slender, flexuous, scabrous branchlets, with rather long-pediceled spikelets, mostly along the upper half; spikelets 3 mm. long, 1.5 to 2 mm. wide, turgid, obovoid, obtuse, olivaceous to brown, the faintly nerved, very viscid glumes whitish on the margin; first and second glumes about equal, slightly shorter than the fruit, the sterile lemma thinner in texture, mostly entirely concealed beneath the first glume, sterile palea wanting; fruit 2.6 mm. long, 1.2 to 1.5 mm. wide, obovoid-elliptic, olive-brown, densely minutely puberulent at the summit, otherwise smooth and shining, the margins of the lemma toward the summit scarcely inrolled.

DISTRIBUTION.

Mountain woods, Mexico and the West Indies, south to Paraguay and Bolivia.

Mexico: Zacualpan, *Purpus* 2156, 2903; Mirador, *Liebmann* 428; San Cristobal, *Bourgeau* 3192; Orizaba, *Botteri;* State of Chiapas, *Nelson* 3357.

Costa Rica: Cañas Gordas, *Pittier* 11017; Diquís Valley, *Pittier* 12002.

Cuba: Loma Pelada, *Wright* 757.

Jamaica: Gordon Town, *Hart* 792; Troy, *Maxon* 2816.

Porto Rico: Mayaguez, *Sintenis* 357; Sierra de Yabucoa, *Sintenis* 2609.

Brazil: Prov. Minas Geraes, *Widgren* in 1845, *Regnell* III 1370; São Paulo, *Löfgren* 2291, *Löfgren & Edwall* 2383; Campinas, *Novaes* 1247.

Paraguay: Central Paraguay, *Morong* 405 A.

Bolivia: Mapirí, *Rusby* 244.

80. **Panicum rudgei** Roem. & Schult.[a]

Panicum scoparium Rudge, Pl. Guian. 1 : 21. *pl. 29*. 1805, not Lam. 1798. No particular locality in Guiana is mentioned by Rudge. In the Berlin Herbarium is a specimen from Rudge which is authentic though it probably is not the type. The original description and the plate leave no doubt as to the identity of the species.

Panicum rudgei Roem. & Schult. Syst. Veg. 2: 444. 1817. Based on "*Pan. scoparium Rudge.*"

Panicum rudgei brasiliense Raddi, Agrost. Bras. 48. 1823. "Species rarissima observata tantum in viciniis fluminis *Inhumirim*." We have not seen the type of this, but the description applies to the type of *P. rudgei*.

Panicum dasytrichum Spreng. Syst. Veg. 1: 317. 1825. "Brasil." The type, in the Sprengel Herbarium, was collected by Hoffmansegg.

Panicum hirsutum Willd.; Spreng. Syst. Veg. 1: 317. 1825, not Swartz, 1797. This is given as a synonym under *P. dasytrichum* and is credited to "W. herb." The type, in the Willdenow Herbarium, was collected by Hoffmansegg in Brazil.

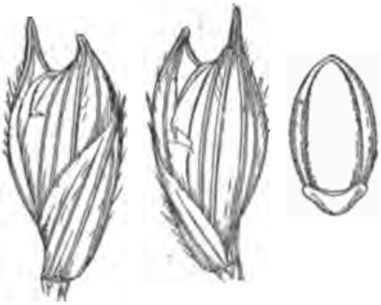


FIG. 133.—*P. rudgei*. From Salzmann's specimen of *P. rigens*.

Panicum rhigiophyllum Steud. Syn. Pl. Glum. 1: 76. 1854. "P. rigens. *Salzm.* Hrbr. Bahia." This specimen was not found in the Steudel Herbarium, but a Salzmann specimen bearing this name was examined at Halle.

---

[a] The following species, though not North American, may here be described on account of its relationship to *Panicum rudgei*:

Panicum rotundum sp. nov.

Plants perennial, in small tufts; culms 30 to 50 cm. high, rather stout, stiff, erect or somewhat geniculate at base, densely ascending-hirsute, the nodes densely bearded; sheaths, except the upper, mostly shorter than the internodes, hirsute like the culms; ligules membranaceous, ciliate, the hairs mingling with those of the blade; blades thick, erect or appressed, linear, 5 to 20 cm. long, 2 to 5 mm. wide, more or less involute, at least toward the long-acuminate apex, only as wide as the sheath at base, the juncture obscure, densely hirsute on the upper surface, harshly velvety beneath; panicles terminal and in the axils of the upper 1 to 3 leaves, forming an oblong inflorescence as in *P. rudgei*, about one-third the height of the plant, the main axis pilose, the slender, angled, scabrous, stiff but flexuous branchlets ascending or spreading, pilose in the axils, the long pedicels divergent; spikelets 2.3 to 2.5 mm. long, 1 to 1.2 mm. wide, very turgid, abruptly pointed, strongly nerved, a few stiff, appressed hairs here and there between the nerves; first glume over half the length of the spikelet, abruptly pointed; second glume and sterile lemma subequal, exceeding the fruit, the lemma subtending a palea and staminate flower; fruit 1.8 mm. long, 1 mm. wide, ellipsoid, smooth and shining, a broad scar at the base.

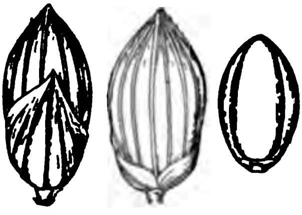


FIG. 134.—*P. rotundum*. From type specimen.

Panicum rigens Salzm.; Steud. Syn. Pl. Glum. 1: 76. 1854, not Swartz, 1788. This is given as a synonym under *P. rhigiophyllum* Steud. Salzmann specimens from Bahia, bearing this name have been examined in the herbaria at Munich and Halle and in the United States National Herbarium.

Panicum cayennense divaricatum Doell in Mart. Fl. Bras. 2^2: 220. 1877. Based on "*Panicum scoparium Rudge * * * non Lam. * * * nec Michaux.*"

DESCRIPTION.

Plants perennial, yellow-green or tawny; culms robust, 30 to 100 cm. high, erect or somewhat geniculate at base, often zigzag, especially above, densely and harshly villous; sheaths nearly equaling the internodes or overlapping, densely papillose-villous or hirsute; ligules membranaceous, ciliate, about 1 mm. long, the hairs of the ligule blending with the hairs of the upper surface of the blade: blades thick, linear, 15 to 40 cm. long, 5 to 10 mm. wide, rather rigidly ascending, flat or folded, slightly narrowed toward the base, gradually long-acuminate, densely short-hirsute on both surfaces or glabrate; panicles terminal and in the axils of the approximate upper 2 to 6 leaves, forming an oblong inflorescence one-third the height of the plant, or more, each more or less included at base in the subtending sheath; branches pilose in the axils, branching freely from the base, the branches and branchlets angled, scabrous, the lower branchlets stiffly ascending, the upper and the long pedicels divaricate, somewhat flexuous; spikelets about 3.5 mm. long, 1.5 mm. wide, turgid, somewhat attenuate at base, strongly nerved, sparsely hirsute, the stiff hairs irregularly distributed; first glume about two-thirds the length of the spikelets, acuminate; second glume and sterile lemma subequal, exceeding the fruit, abruptly pointed, the latter subtending a palea and staminate flower; fruit 2.1 mm. long, 1.1 mm. wide, elliptic, smooth and shining, a cartilaginous flap-like appendage at the base.

All the cited specimens from Costa Rica have pubescent blades, while several of those from South America have glabrate blades, e. g., *Rusby & Squires* 362, *Spruce* 93. These specimens with glabrate blades, though apparently less common than those with pubescent blades, are the typical form described by Meyer.

DISTRIBUTION.

Savannas, Costa Rica to Brazil.

COSTA RICA: Buenos Aires, *Pittier* 10576, *Tonduz* 3679, 4875; Los Palmares, *Pittier* 10588; Helechales del General, *Pittier* 12064.

VENEZUELA: Santa Catalina, *Rusby & Squires* 362.

BRITISH GUIANA: *Jenman* 5978.

DUTCH GUIANA: Surinam, *Hostmann* 642.

BRAZIL: Para, *Spruce* 93; Bahia, *Salzmann;* Organ Mountains, *Wilkes* Expl. Exped. 9; without locality, *Gardner* 1178.

Type U. S. National Herbarium no. 824039, collected in 1845, in the Province of Minas Geraes, Brazil, by Widgren, "Ex herb. Brasil. Regnellian. Musei bot. Stockholm," and distributed as "*Panicum cayennense* Lam."

This species is related to *P. rudgei* with which and *P. cayennense* it has been confused.

DISTRIBUTION.

Brazil. The data on the labels of the specimens examined do not include habitat.

BRAZIL: Prov. Minas Geraes, *Henschen & Regnall* III 1367, *Widgren* in 1845; without locality, *Burchell* A 101-2 (Gray Herb.), *Riedel.*

81. Panicum megiston Schult.

Panicum altissimum Meyer, Prim. Fl. Esseq. 63. 1818, not DC. 1817.[a] "In sylvis humidis plantationis *Hof van Holland*," Essequebo or British Guiana. We have seen a portion of the type in the Trinius Herbarium. The type is in the Göttingen Herbarium.

Panicum megiston Schult. Mant. 2: 248. 1824. Based on *P. altissimum* Meyer.

Panicum tuberculatum Presl, Rel. Haenk. 1: 307. 1830. The locality given by Presl is, "*Hab. in Luzonia.*" The type, in the herbarium of the German University at Prague, is labeled "Luzonia," but it probably came from Mexico.

Panicum elatior[*us*] Kunth, Rév. Gram. 1: 38. 1829. Based on *P. altissimum* Meyer.

Panicum equisetum Nees; Doell in Mart. Fl. Bras. 2^2: 206. 1877. This is given as a synonym under *P. megiston* Schult., and is credited to "*Nees ab Esenbeck in herb. Reg. Berolinensis schedula.*" The type, in the Berlin Herbarium, was collected by Sello in Bahia, Brazil.

DESCRIPTION.

Plants perennial; culms tall and robust, glabrous; sheaths papillose-hispid or papillose only; ligules fimbriate, about 1.5 mm. long; blades firm, ascending, 15 to 40 cm. or more long, 1.5 to 3 cm. wide, linear-lanceolate, slightly narrowed to the rounded base, glabrous; panicles finally exserted, 40 to 60 cm. long, the stiff main axis striate-angled, smooth or scabrous, the branches in distant verticils, often as many as 20 to 30 in a verticil, 10 to 20 cm. long, slender, stiffly or sinuously ascending, very scabrous, nearly simple, bearing the scattered, short-pediceled spikelets along the upper half or third; spikelets usually purplish at maturity, about 3.4 mm. long, 1.5 mm. wide, globular-obovoid, glabrous; first glume scarcely one-third the length of the spikelet, pointed; second glume slightly shorter than the sterile lemma, both abruptly apiculate, 7 to 9-nerved, the glume about equaling the fruit, the sterile palea rather firm, about as long as the fruit; fruit 2.8 mm. long, 1.4 mm. wide, abruptly pointed, smooth and shining.

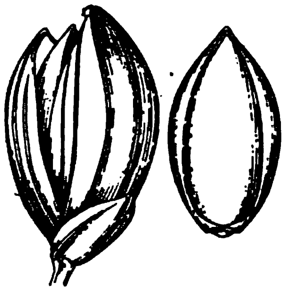


Fig. 135.—*P. megiston.* From type specimen of *P. altissimum* Meyer.

Meyer states that the culms ascend to a height of 20 or 30 feet and that they are much branched. Our specimens are all, with the exception of *Wright* 3872, the simple upper part of the culm only. Eggers, on the label accompanying his no. 14345, gives the height as 6 to 8 feet. The Wright specimen, except for the underground portion, is entire. This is simple and measures but 1.2 meters in height.

This species somewhat resembles *P. oaxacense* and *P. procerrimum* of the genus Lasiacis, but the fruit has not the form and texture characteristic of that genus.

DISTRIBUTION.

In moist woods, Mexico and Cuba to Paraguay.

MEXICO: San Juan Bautista, *Rovirosa* 532.
CUBA: St. Cruz de los Pinos, *Wright* 3872.
VENEZUELA: Santa Catalina, *Rusby & Squires* 355.
BRAZIL: Without locality, *Riedel* 1239, *Gardner* 1179.
PARAGUAY: *Morong* 813, 1072.
ECUADOR: Balao, *Eggers* 14345.

---

[a] Roem. & Schult. Syst. Veg. 2: 457. 1817. The diagnosis is here referred to De Candolle "*Hornem. Hort. Hafn.* I. p. 84." The latter work we have not seen, nor that cited by the Index Kewensis, "Elench. Hort. Monsp. 42. 1805," for *P.* "*altissimum* Brouss., * * * nomen." In any case the name *P. altissimum* is preoccupied.

Subgenus DICHANTHELIUM subgen. nov.

Perennial, from a crown, rarely from short, matted rootstocks, surrounded by a more or less well-marked rosette of usually short winter leaves, in spring producing simple culms with mostly narrowly lanceolate blades and terminal panicles with numerous spikelets, these rarely perfecting seed; the early culms branching at some or all of the nodes (in a few species from the base only) after the maturity of the primary panicles or sometimes before; the branches often repeatedly branching, the short branchlets more or less fascicled and bearing usually much reduced leaves; the terminal one or two joints of the primary culms often finally falling, the whole producing an autumnal form usually strikingly different from the vernal form; the secondary panicles reduced, the latest more or less included in the sheaths, cleistogamous and perfecting their grains.

The type species is *P. dichotomum* L.

In this group there is an intermediate stage of branching, in which the plants do not show the characteristic vernal nor autumnal habit. Vernal culms are sometimes produced on plants during the branched condition, because of renewal of activity, due to increased moisture, excess of nutriment, injury, or other causes.

SYNOPSIS OF GROUPS.

Blades elongated, not over 5 mm. wide, 20 times as long as wide; autumnal form branching from the base only (from the lower nodes in *P. werneri*)........................... DEPAUPERATA (p. 151).

Blades not elongated, (or if so, more than 5 mm. wide and autumnal form not branching from base).

Plants branching from the base, finally forming rosettes or cushions, foliage soft and lax; blades prominently ciliate except in *P. laxiflorum*................................. LAXIFLORA (p. 158).

Plants branching from the culm nodes or rarely remaining simple.

Blades long, stiff; autumnal form bushy-branched above.

Spikelets turgid, attenuate at base; mostly pustulose-pubescent; blades conspicuously striate, tapering from base to apex................................ ANGUSTIFOLIA (p. 165).

Spikelets scarcely turgid, not attenuate at base; blades tapering to both ends............................ BICKNELLIANA (p. 176).

Blades not long and stiff (somewhat so in *P. oligosanthes*, *P. malacon*, *P. commonsianum*, and *P. equilaterale*); not bushy-branched.

Plants not forming a distinct winter rosette; spikelets attenuate at base, papillose...................... PEDICELLATA (p. 292).

Plants forming a distinct winter rosette; spikelets not attenuate at base.

Spikelets turgid, blunt, strongly nerved (not strongly turgid in *P. oligosanthes*); blades rarely as much as 1.5 cm. wide (sometimes 2 cm. in *P. ravenellii* and *P. xanthophysum*).

Sheaths, or some of them, papillose-hispid (sometimes all glabrous in *P. helleri*); spikelets 3 to 4 mm. long (2.7 to 3 mm. in *P. wilcoxianum*).... OLIGOSANTHIA (p. 278).

Sheaths glabrous or minutely puberulent; spikelets 1.5 to 2.5 mm. long, unsymmetrically pyriform; culms wiry.......................... LANCEARIA (p. 271).

- Spikelets not turgid, blunt, nor strongly nerved (see, however, *P. roanokense* and *P. caerulescens*.)
  - Ligule of conspicuous hairs, usually 3 to 5 mm. long.
    - Sheaths glabrous or only the lowermost somewhat pubescent..........................Spreta (p. 200).
    - Sheaths strongly pubescent....................Lanuginosa (p. 208).
  - Ligule obsolete or nearly so (manifest in *P. viscidellum*, *P. oricola*, *P. tsugetorum* and *P. curtifolium*.)
    - Spikelets spherical at maturity; blades glabrous, firm, cordate; plants sparingly branching...Sphaerocarpa (p.250).
    - Spikelets usually obovate or elliptic.
      - Blades of mid-culm elongated, less than 1.5 cm. wide; culms usually tall; spikelets pointed, abruptly so in the velvety *P. scoparium* and *P. viscidellum*......................Scoparia (p. 294).
      - Blades of mid-culm not elongated (somewhat so in *P. equilaterale*).
        - Blades cordate, 1 to 3 cm. wide (5 to 12 mm. in *P. ashei*); spikelets pubescent.
          - Spikelets 2.5 to 3 mm. long; sheaths glabrous or minutely puberulent.....Commutata (p. 300).
          - Spikelets 3 to 5 mm. long (sometimes but 2.7 mm. long in the hispid-sheathed *P. clandestinum* ....Latifolia p. (312).
        - Blades not cordate, less than 1 cm. wide.
          - Sheaths crisp or appressed-pubescent; blades firm; spikelets pubescent.....Columbiana (p. 240).
          - Sheaths glabrous (sparsely pilose in *P. curtifolium* and the lower, velvety in *P. mattamuskeetense*).
            - Vernal culms delicate (sometimes scarcely so in *P. albomarginatum* and *P. tenue*); spikelets 1.5 mm. or less long (1.6 to 1.7 mm. in *P. tenue*)...Ensifolia (p. 258).
            - Vernal culms slender but not delicate, rarely less than 40 cm. high; spikelets 2 to 2.9 mm. long (1.5 mm. in *P. microcarpon* and *P. caerulescens*).
              - Lower internodes shortened, upper elongated, producing a nearly naked culm, leafy at base; spikelets narrowly ovate, 2.7 to 2.9 mm. long......................Nudicaulia (p. 179).
              - Lower internodes not shortened; vernal culms about evenly leafy throughout, spikelets elliptic or obovate, not over 2.5 mm. long.......................Dichotoma (p. 179).

KEY TO SPECIES.

- Spikelets glabrous.
  - Spikelets 3 mm. or more long, strongly nerved.
    - Spikelets pointed, blades elongated ...... 82. *P. depauperatum*.
    - Spikelets blunt, blades not elongated.
      - Spikelets 3.2 to 3.3 mm. long; blades firm; sheaths, or some of them, hispid ...... 171. *P. scribnerianum*.
      - Spikelets not over 3 mm. long; blades rather thin; sheaths glabrous or sparsely hispid ...... 170. *P. helleri*.
  - Spikelets less than 3 mm. long.
    - Second glume and sterile lemma exceeding the fruit and pointed beyond it; spikelets 2.2 to 2.9 mm. long.
      - Blades clustered toward the base ...... 101. *P. nudicaule*.
      - Blades not clustered toward the base.
        - Sheaths, at least the secondary, hispid ...... 181. *P. scabriusculum*.
        - Sheaths glabrous.
          - Blades firm; fruit 1.5 mm. long ...... 182. *P. cryptanthum*.
          - Blades thin; fruit nearly 2 mm. long ...... 111. *P. yadkinense*.
    - Second glume and sterile lemma not pointed beyond the fruit.
      - Ligule manifest, 1 to 3 mm. long.
        - Culms rather stout; ligule 2 to 3 mm. long; sheaths glabrous ...... 116. *P. spretum*.
        - Culms slender; ligule 1 mm. long; sheaths sparsely pilose ...... 159. *P. curtifolium*.
      - Ligule obsolete.
        - Spikelets 1.5 mm. or less long.
          - Nodes bearded ...... 102. *P. microcarpon*.
          - Nodes not bearded.
            - Culms and blades pilose ...... 90. *P. strigosum*.
            - Culms glabrous.
              - Blades conspicuously ciliate; plants branching at base only ...... 89. *P. polycaulon*.
              - Blades not ciliate; plants branching from middle or upper nodes.
                - Vernal culm 50 cm. or more high; spikelets turgid, strongly nerved; autumnal form erect, with fascicled branches shorter than the primary internodes ...... 113. *P. caerulescens*.
                - Vernal culms usually much less than 50 cm. high; autumnal form spreading or reclining.
                  - Spikelets 1.1 to 1.2 mm. long; blades rarely as much as 5 cm. long ...... 160. *P. chamaelonche*.
                  - Spikelets 1.2 to 1.4 mm. long.
                    - Blades elongated, at least some of them 8 to 10 cm. long ...... 161. *P. glabrifolium*.
                    - Blades not over 3 cm. long ...... 157. *P. ensifolium*.
        - Spikelets 2 mm. or more long.
          - Blades elongated, some of them 20 times as long as wide; spikelets 2.2 to 2.8 mm. long.
            - Blades erect; branches, when present, from the lower nodes only ...... 85. *P. werneri*.
            - Blades spreading; branches from upper nodes... 99. *P. bicknellii*.

- Blades not elongated, about 10 times as long as wide.
  - Culms soon prostrate, vine-like; branches divaricate.
    - Plants bright green; culms lax; spikelets not over 2.1 mm. long........................ 114. *P. lucidum.*
    - Plants grayish green; culms stiff; spikelets 2.5 mm. long................................ 115. *P. sphagnicola.*
  - Culms not vine-like; branches not divaricate.
    - Spikelets 2.3 to 2.6 mm. long.
      - Blades, or some of them, at least 8 mm. wide; fruit papillose-roughened............... 166. *P. webberianum.*
      - Blades not over 6 mm. wide; fruit smooth and shining............................ 167. *P. patentifolium.*
    - Spikelets 2 mm. long.
      - Culms wiry, crisp-puberulent; blades ciliate at base................................ 164. *P. lancearium.*
      - Culms glabrous; blades not ciliate.
        - Blades erect, firm; spikelets turgid, strongly nerved; plants grayish olive. 112. *P. roanokense.*
        - Blades spreading; spikelets not turgid.
          - Nodes glabrous; autumnal form erect, branched like a little tree.......... 109. *P. dichotomum.*
          - Nodes, at least the lowest, usually bearded; autumnal form topheavy-reclining............................ 110. *P. barbulatum.*
- Spikelets pubescent.
  - Spikelets 3 mm. or more long.
    - Blades elongated, those of the mid-culm at least 15 times as long as wide.
      - Secondary panicles from basal sheaths only.
        - Spikelets pointed, about 3.5 mm. long.............. 82. *P. depauperatum.*
        - Spikelets blunt, 3 mm. or less long.................. 83. *P. perlongum.*
      - Secondary panicles from upper branches.
        - Spikelets attenuate at base, pustulose-pubescent; lowermost sheaths softly villous................ 95. *P. fusiforme.*
        - Spikelets not attenuate at base, not pustulose; lowermost sheaths glabrous or hispid.
          - Upper leaves approximate; sheaths glabrous...... 187. *P. æquilaterale.*
          - Upper leaves distant; at least lower sheaths hispid. 180. *P. aculeatum.*
    - Blades not elongated, usually less than 10 times as long as wide.
      - Blades velvety-pubescent beneath.
        - Spikelets 3 mm. long; plants velvety-villous throughout................................... 169. *P. malcophyllum.*
        - Spikelets 4 mm. or more long.
          - Sheaths ascending-hirsute; ligule 3 to 4 mm. long.. 173. *P. ravenelii.*
          - Sheaths downy-pubescent; ligule obsolete.........191a. *P. boscii molle.*
      - Blades not velvety-pubescent beneath.
        - Sheaths glabrous or minutely puberulent only.
          - Nodes bearded; spikelets 4 mm. or more long...... 191. *P. boscii.*
          - Nodes not bearded; spikelets not over 3.8 mm. long.
            - Spikelets 3.5 to 3.8 mm. long; blades 2 cm. or more wide............................... 190. *P. latifolium.*

Spikelets scarcely more than 3 mm. long.

Spikelets turgid, blunt; blades mostly less than 1 cm. wide........................170. *P. helleri.*

Spikelets not turgid; blades more than 1 cm. wide.

Panicle narrow, branches ascending; spikelets on long stiff pedicels..............100. *P. calliphyllum.*

Panicle as broad as long, branches spreading.

Plants glaucous; basal blades conspicuously ciliate.........................185. *P. mutabile.*

Plants not glaucous; basal blades not ciliate, or at the base only.

Culms erect, or autumnal form leaning; blades symmetrical, broadly cordate.............................184. *P. commutatum.*

Culms decumbent; blades usually unsymmetrical and falcate; narrowed to the scarcely cordate base........186. *P. joorii.*

Sheaths pubescent.

Pubescence ascending or appressed.

Spikelets 3 to 3.2 mm. long; first glume conspicuously remote..............................142. *P. malacon.*

Spikelets 3.5 to 4 mm. long; first glume not remote.....................................172. *P. oligosanthes.*

Pubescence spreading, sometimes sparse.

Plants robust, about 1 meter high; blades usually 2 cm. or more wide........................189. *P. clandestinum.*

Plants rarely more than 50 cm. high; blades rarely over 1.5 cm. wide.

Panicles about as wide as long; blades ascending or spreading.

Spikelets attenuate at base, 3.5 to 4 mm. long.................................. See PEDICELLATA (p. 292).

Spikelets not attenuate at base, not over 3.3 mm. long.

Spikelets 3.2 to 3.3 mm. long, blades firm; sheaths, or some of them, more or less hispid...............................171. *P. scribnerianum.*

Spikelets not over 3 mm. long; blades rather thin; sheaths, or some of them, glabrous or sparsely hispid...........170. *P. helleri.*

Panicles narrow, branches erect (sometimes ascending in *P. wilcoxianum*), or spreading at anthesis only; blades erect.

Spikelets not over 3 mm. long; blades not over 6 mm. wide......................168. *P. wilcoxianum.*

Spikelets 3.7 to 4 mm. long; blades 8 to 20 mm. wide.

Blades papillose-hispid...................174. *P. leibergii.*

Blades glabrous on both surfaces.........175. *P. xanthophysum.*

Spikelets less than 3 mm. long.

Blades elongated, not over 5 mm. wide; secondary panicles at the base only or wanting.

Culms single or few in a tuft; spikelets turgid, 2.7 to 3 mm. long .... 83. *P. perlongum.*

Culms in large tufts; spikelets not turgid, not over 2.7 mm. long.

Sheaths pilose .... 84. *P. linearifolium.*

Sheaths glabrous .... 85. *P. werneri.*

Blades usually not elongated; secondary panicles not at the base.

Spikelets attenuate at base, mostly prominently pustulose; blades narrow, stiff, strongly nerved, tapering from base to apex.

Nodes bearded; plants grayish-villous; autumnal blades flat.

Spikelets 2 mm. long .... 92. *P. chrysopsidifolium.*

Spikelets 2.5 to 2.8 mm. long .... 93. *P. consanguineum.*

Nodes not bearded; plants villous only at the base, or nearly glabrous.

Autumnal blades flat; lower panicle branches spreading or deflexed .... 94. *P. angustifolium.*

Autumnal blades involute; lower panicle branches more or less ascending.

Plants glabrous or nearly so; autumnal culms erect.

Spikelets subsecund along the suberect panicle branches .... 98. *P. neuranthum.*

Spikelets not subsecund; panicle loose and open .... 97. *P. ovinum.*

Plants pubescent, at least on the lower half.

Spikelets about 2.4 mm. long; vernal blades 7 to 12 cm. long, autumnal blades not falcate. 96. *P. arenicoloides.*

Spikelets not over 2 mm. long; vernal blades 4 to 6 cm. long, autumnal blades falcate.. 91. *P. aciculare.*

Spikelets not attenuate at base.

Sheaths retrorsely pilose; blades soft and lax.

Panicle branches ascending, forming a compact panicle; spikelets 1.6 mm. long .... 87a. *P. xalapense strictirameum.*

Panicle branches loosely spreading.

Blades ciliate and more or less pilose on the surface; spikelets 2 mm. long .... 87. *P. xalapense.*

Blades glabrous or nearly so on the surface and margin; spikelets 2.2 mm. long .... 86. *P. laxiflorum.*

Sheaths not retrorsely pilose.

Ligule manifest, mostly 2 to 5 mm. long.

Sheaths, or all but the lowest glabrous; spikelets not over 1.6 mm. long.

Panicle narrow, one-fourth to one-third as wide as long .... 116. *P. spretum.*

Panicle open, nearly as wide as long.

Spikelets 1.5 mm. long .... 117. *P. lindheimeri.*

Spikelets 1.1 mm. long .... 119. *P. longiligulatum.*

Sheaths pubescent.

    - Spikelets abruptly pointed; blades cordate; Mexican ....179. *P. viscidellum.*
    - Spikelets not pointed at maturity; blades not cordate.
      - Ligule 1 mm. long; sheaths sparsely pilose; spikelets 1.4 mm. long..................159. *P. curtifolium.*
      - Ligule usually more than 1 mm. long.
        - Ligule 1 to 1.5 mm. long; culms and sheaths appressed-pubescent; spikelets 1.5 to 1.9 mm. long.
          - Spikelets 1.8 to 1.9 mm. long; plants bluish green.......................146. *P. tsugetorum.*
          - Spikelets 1.5 mm. long, nearly globular; plants olivaceous..................148. *P. oricola.*
        - Ligule 2 to 5 mm. long.
          - Spikelets 1 to 1.3 mm. long; culms and sheaths softly appressed-pubescent.
            - Spikelets 1.2 to 1.3 mm. long.........118. *P. leucothrix.*
            - Spikelets not over 1 mm. long........120. *P. wrightianum.*
          - Spikelets mostly more than 1.5 mm. long, if less, pubescence spreading. See LANUGINOSA (p. 208).

- Ligule obsolete or less than 1 mm. long.
  - Nodes bearded (*P. scoparium* may appear to be bearded).
    - Spikelets nearly 3 mm. long; plants velvety-villous throughout.......................169. *P. malacophyllum.*
    - Spikelets rarely as much as 2.5 mm. long; plants not pubescent throughout.
      - Spikelets 1.5 to 1.6 mm. long...............102. *P. microcarpon.*
      - Spikelets 2 mm. or more long.
        - Blades all velvety; autumnal form sparingly branched......................105. *P. annulum.*
        - Blades glabrous, or only the lower pubescent or velvety.
          - Spikelets 2 mm. long; autumnal form profusely branching.
            - Fruits slightly exposed at maturity; upper sheaths viscid-spotted......103. *P. nitidum.*
            - Fruits covered at maturity; sheaths not viscid-spotted; Mexican.....104. *P. multirameum.*
          - Spikelets 2.2 mm. or more long; autumnal form less profusely branching.
            - Sheaths and upper nodes glabrous....107. *P. clutei.*
            - Lower sheaths and all nodes pubescent............................106. *P. mattamuskeetense.*
  - Nodes not bearded.
    - Plants densely gray-velvety throughout, a viscid, glabrous ring below the nodes.....178. *P. scoparium.*
    - Plants not gray-velvety.
      - Sheaths or some of them pilose or hispid.
        - Pubescence papillose-hispid.
          - Spikelets ovate, pointed, 2.3 to 2.6 mm. long...............................181. *P. scabriusculum.*

Spikelets obovate, obtuse, nearly 3 mm. long.
Blades about 2 cm. wide .... 189. *P. clandestinum.*
Blades not over 6 mm. wide .... 168. *P. wilcoxianum.*
Pubescence ascending-pilose.
Spikelets 2 to 2.5 mm. long.
Winter blades elongated, 5 to 10 cm. long; plants bluish green; spikelets 2 mm. long .... 145. *P. wilmingtonense.*
Winter blades 1 to 3 cm. long; plants olivaceous.
Spikelets about 2.4 mm. long; panicle open, branches stiffly spreading .... 143. *P. commonsianum.*
Spikelets 2 to 2.1 mm. long; panicle rather dense, branches ascending .... 144. *P. addisonii.*
Spikelets not over 1.7 mm. long.
Blades white-margined; spikelets 1.6 to 1.7 mm. long, elliptic .... 152. *P. tenue.*
Blades not white-margined; spikelets 1.3 to 1.4 mm. long, nearly globular .... 147a. *P. columbianum thinium.*
Sheaths glabrous or puberulent only.
Spikelets spherical, not over 1.8 mm. long; blades cordate, ciliate at base .... See SPHAEROCARPA (p. 250).
Spikelets not spherical.
Culms soon prostrate, vine-like; branches divaricate.
Plants bright green; culms lax; spikelets not over 2.1 mm. long .... 114. *P. lucidum.*
Plants grayish green; culms stiff; spikelets 2.5 mm. long .... 115. *P. sphagnicola.*
Culms not vine-like; branches not divaricate.
Spikelets unsymmetrically pyriform, strongly nerved; culms wiry ..... See LANCEARIA (p. 271).
Spikelets not pyriform.
Blades elongated, especially the upper, about 20 times as long as wide; spikelets about 2.5 mm. long, on long pedicels .... 99. *P. bicknellii.*
Blades not elongated. (See continuation.)

(Continuation.)

Spikelets 2 mm. or more long.
Spikelets 2.5 to 3 mm. long; blades cordate, usually 1 cm. or more wide.
Plants glaucous; basal blades conspicuously ciliate .. 185. *P. mutabile.*
Plants not glaucous; basal blades ciliate at base only.
Blades nearly linear, that is, with parallel margins; first glume about half as long as the spikelet; Mexican .... 188. *P. albomaculatum.*

Blades lanceolate; first glume not more than one-third as long as the spikelet.

Culms crisp-puberulent; blades rarely over 1 cm. wide; spikelets about 2.5 mm. long..................................183. *P. ashei.*

Culms glabrous or obscurely puberulent; blades usually 1.5 cm. or more wide; spikelets 2.7 to 3 mm. long..........184. *P. commutatum.*

Spikelets not over 2.3 mm. long; blades not cordate, usually less than 1 cm. wide.

Blades conspicuously ciliate, soft and lax, crowded at the base.................................. 88. *P. ciliatum.*

Blades not ciliate or so only at base, not crowded at the base of the culm.

Blades not over 6 mm. wide; plants not branching or rarely branching from near the base.................................. 85. *P. werneri.*

Blades 7 mm. or more wide; plants branching from middle and upper nodes.

Primary blades spreading; panicle purplish; fruit exposed at summit.............107. *P. clutei.*

Primary blades erect; panicle green; fruit covered.............................108. *P. boreale.*

Spikelets not over 1.7 mm. long.

Culms crisp-puberulent; spikelets turgid................147. *P. columbianum.*

Culms glabrous.

Blades white-margined, firm.

Blades puberulent beneath, often above........152. *P. tenue.*

Blades glabrous.

Uppermost blades much reduced; culms branching from lower nodes only, the branches repeatedly branching......153. *P. albomarginatum.*

Uppermost blades about as long as the others; culms bearing short branches from middle and upper nodes.............154. *P. trifolium.*

Blades not white-margined or very obscurely so (or if white margin is evident, spikelets only 1.1 mm. long).

Culms branching only at base; plants soft, light green.................................158. *P. vernale.*

Culms branching at the nodes.

Spikelets 1.1 mm. long; winter blades bluish green, not glossy....................156. *P. concinnius.*

Spikelets 1.3 to 1.5 mm. long.

Blades involute, falcate, with long stiff hairs on margin near base; plants stiff and wiry..................162. *P. breve.*

Blades not involute or at tip only, not falcate.

Plants bright green; winter blades conspicuous, glossy green...155. *P. flavovirens.*

Plants olive; winter blades not conspicuous nor glossy.........157. *P. ensifolium.*

Depauperata.—Culms simple, mostly 10 to 40 cm. high; ligules less than 1 mm. long; blades much elongated, 5 to 35 cm. long, 2 to 5 mm. wide, narrowed at the base, long-acuminate at apex, basal blades shorter, but not forming a distinct rosette in the autumn; spikelets 2.2 to 3.8 mm. long, strongly 7 to 9-nerved. Autumnal form bearing simple branches from the basal or lower nodes, the reduced panicles more or less concealed in the foliage at the base of the plants.

Spikelets about 3.5 mm. long, beaked...................... 82. *P. depauperatum.*
Spikelets 3 mm. long or less, (sometimes 3.2 mm. long in *P. perlongum*) not beaked.
  Culms single or few in a tuft; spikelets turgid, blunt, 2.7 to 3.2 mm. long; prairie plants.................. 83. *P. perlongum.*
  Culms in large tufts; spikelets not turgid, 2.2 to 2.7 mm. long; plants of dry woods.
    Sheaths pilose; spikelets 2.2 to 2.7 mm. long, pilose.. 84. *P. linearifolium.*
    Sheaths glabrous; spikelets 2.2 to 2.3 mm. long; glabrous or sparingly pilose..................... 85. *P. werneri.*

82. **Panicum depauperatum** Muhl.

Panicum strictum Pursh, Fl. Amer. Sept. 1: 69. 1814, not R. Br. 1810. "On the banks of the Delaware, Pennsylvania." The type, in Kew Herbarium, has pilose sheaths.

Panicum depauperatum Muhl. Descr. Gram. 112. 1817. "Habitat in glareosis, floret Maio, Junio, Penns. Carolina." The type is in the Muhlenberg Herbarium. Muhlenberg described the species as having glabrous or pubescent leaves, pilose sheaths, glabrous spikelets, and fertile floret a little shorter than the second glume and sterile lemma. This description applies to the plant that has generally been referred to *P. depauperatum* rather than to the one with smaller spikelets later distinguished as *P. linearifolium*, although in Muhlenberg's herbarium specimens of both species are included in the same cover. Furthermore, some specimens with large spikelets have pilose and others glabrous sheaths. Of these, a specimen with pilose sheaths and spikelets 3.5 mm. long has been chosen as the type and has been so indicated by attaching a note to the specimen.

Panicum rectum Roem. & Schult. Syst. Veg. 2: 457. 1817. Based on *P. strictum* Pursh, the original description of which is copied.

Panicum involutum Torr. Fl. North. & Mid. U. S. 144. 1823. "Near Deerfield, Massachusetts. Cooley." The type, in the Torrey Herbarium, is a small clump with culms 20 to 30 cm. high, sparsely pilose sheaths, involute blades with a few hairs on under surface, overmature primary panicles 4 to 5 cm. long, and spikelets 3.8 mm. long, the second glume and sterile lemma with a few hairs; secondary panicles with nearly mature spikelets are present at base. The sheet bears two labels, one, "From Dr. Cooley, Mass.," the other in Torrey's handwriting bears the name "Panicum involutum,*." [Torrey used an asterisk to indicate his own species] followed by a diagnosis.

Panicum muhlenbergii Spreng. Syst. Veg. 1: 314. 1825. Sprengel states nothing as to the source of his specimen other than "Amer. bor. (*P. acuminatum* Muhl.)." Since this name immediately follows *P. acuminatum* Swartz it seems evident that Sprengel meant to name the species which Muhlenberg described[a] as *Panicum acuminatum* Swartz. There is no specimen bearing this name in the Muhlenberg Herbarium. In the Sprengel Herbarium the specimen labeled "Panicum Muhlenbergii," and which must be taken as the type, is *P. depauperatum* Muhl. This is from "Pine barrens, N. Jers., from Dr. Torrey."

Panicum junceum Trin. Gram. Pan. 220. 1826. Trinius states that his specimen is from North America and called *P. acuminatum* by Sprengel. Such a specimen could not be found in the Trinius Herbarium. Since Sprengel cites "*P. acuminatum* Muhl." under his *P. muhlenbergii* his specimen or a part of it is doubtless the specimen referred to by Trinius. The description well applies to an involute-leaved plant of *P. depauperatum*.

---

[a] Descr. Gram. 125. 1817.

Panicum sprengelii Kunth, Rév. Gram. 1: 39. 1829. Based on *P. muhlenbergii* Spreng., without explanation as to change of name.

Panicum depauperatum involutum Wood, Class-book 786. 1861. Based on *P. involutum* Torr.

? *Panicum depauperatum laxa*[*um*] Vasey, U. S. Dept. Agr. Div. Bot. Bull. 8: 29. 1889. "Virginia, Florida, Texas, Arkansas, Missouri." Described as "weaker stemmed, panicle with longer and more spreading branches, * * * spikelets smaller." No type is indicated and there is no specimen in the National Herbarium so marked by Doctor Vasey. The description would seem to apply to *P. linearifolium*, but the range given is south of that in which that species is common, and no specimens of it from any of the States mentioned, except one each from Missouri, Arkansas, and Texas which are labeled "Panicum depauperatum Muhl." in Vasey's writing, were in the National Herbarium in the time of Doctor Vasey. Hitchcock's no. 1354, Stone Mountain, Georgia, with spikelets 3.1 to 3.2 mm. long, and rather loose panicles may represent Vasey's variety.

DESCRIPTION.

Vernal form with culms several to many in a tuft, 20 to 40 cm. high, slender but rather stiff, erect or spreading at the summit, glabrous, puberulent or sometimes pilose; nodes ascending-pubescent; sheaths, except the lowest, shorter than the internodes, glabrous to papillose-pilose; blades linear, 6 to 15 cm. long, 2 to 5 mm. wide (the lower shorter), often involute in drying, scabrous on both surfaces, sometimes pubescent beneath; panicles exserted, usually not much exceeding the leaves, 4 to 8 cm. long, rarely longer, few-flowered, the rather strict, remote branches narrowly ascending at maturity; spikelets 3.2 to 3.8 mm. long, rarely only 3 mm. or as much as 4 mm. long, 1.5 to 1.7 mm. wide, elliptical, pointed, glabrous or sparsely pubescent; first glume one-third to half the length of the spikelet, subacute; second glume and sterile lemma equal, extending beyond the fruit, forming a beak, strongly 7 to 9-nerved; fruit 2.1 to 2.3 mm. long, 1.4 to 1.5 mm. wide, oval, minutely umbonate at the apex.

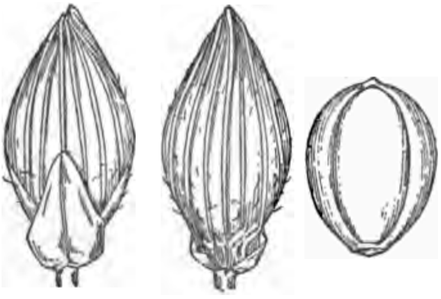


FIG. 136.—*P. depauperatum*. From type specimen.

Autumnal form similar to the vernal, the reduced secondary panicles produced on branches from the basal or lower nodes, more or less concealed in the tuft of basal leaves.

This species is variable as to pubescence and size of spikelets. The spikelets of the type specimen are 3.5 mm. long, those of the glabrous plants on the same sheet in the Muhlenberg Herbarium are 3.9 mm. long. Many New England specimens and occasional specimens from elsewhere have spikelets only 3 mm. long. This form is represented by *Chamberlain* 298, *Chase* 3379, and *Parlin* 1957 from Maine; *Burgess* in 1893 from Massachusetts; *Pierron* in 1876 from Pennsylvania, and *Lansing* 2743 from Indiana. The difference in length is often due to the inrolling of the summit of the second glume and sterile lemma, but the glumes show greater proportion of variation than usual in this genus. As a rule the spikelets do not vary on the same plant, but *Chase* 2402, has spikelets 3 mm. long on the terminal panicle and 3.5 to 4 mm. long on the basal panicles. The fruit shows little variation in size.

DISTRIBUTION.

Open sterile woods, Maine to Minnesota, south to Georgia and Texas.

Maine: Canton, *Parlin* 1957; Chesterville, *Chase* 3283, 3316; Fayette, *Chase* 3379; Cumberland, *Chamberlain* 298.

New Hampshire: Sanbornton, *Carter* 100 (Hitchcock Herb.).

Vermont: Burlington, *Flynn* in 1902.

Massachusetts: Ipswich, *Boott*.

Connecticut: Hartford, *Wilson* 1257; Montville, *Graves* in 1897; Southington, *Andrews* 58, *Bissell* 5533.

Rhode Island: Gloucester, *Collins* in 1908.

New York: Bronx, *Bicknell* in 1896; Woodmere, *Bicknell* in 1905; Rockville Center, *Bicknell* in 1906; Norwood, *Bicknell* in 1903; Long Island, *Bicknell* in 1905.

Ontario: Sarnia, *Macoun* 26322; Toronto, *Biltmore Herb.* 797c.

New Jersey: Atco, *Painter* 699; Eagle Rock, *Mackenzie* 1452.

Pennsylvania: Lancaster County, *Heller* 4775; Easton, *Porter* in 1897; Penryn, *Small* in 1889; Broad Mountain, *Pretz* 1959.

Indiana: Clark, *Bebb* 513; Miller, *Chase* 1540, *Lansing* 2743, *Umbach* 1657.

Illinois: Lansing, *Chase* 867; Makanda, *Gleason* 1022.

Michigan: Port Huron, *Dodge* 78.

Wisconsin: Clear Lake, *Cheney* 1216.

Minnesota: Hennepin County, *Sandberg* in 1890; Nicollet, *Ballard* in 1892.

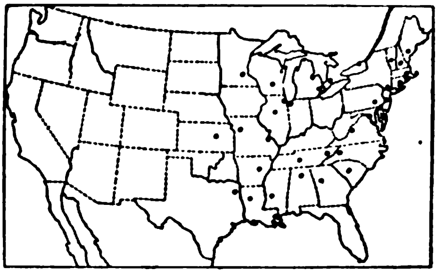


Fig. 137.—Distribution of *P. depauperatum.*

Missouri: St. Louis, *Eggert* 233; Monteer, *Bush* 4654; Lees Summit, *Bush* 3936.

Kansas: Lindsborg, *Plank* 18.

Delaware: Mount Cuba, *Commons* 29.

Maryland: Chesapeake Junction, *Hitchcock* 2414; West Chevy Chase, *Hitchcock* 341; Great Falls, *Chase* 2864, in Kneucker Gram. Exs. 548.

District of Columbia: *Chase* 2284, 2402, *Hitchcock* 340, *House* 947, *Pollard* 338, *Ward* in 1876.

Virginia: Luray, *Steele* 229.

North Carolina: Biltmore, *Biltmore Herb.* 797; Watauga County, *Small & Heller* 279; Chapel Hill, *Chase* 3053; Henderson County, *Biltmore Herb.* 797a.

South Carolina: Clemson College, *House* 2161.

Georgia: Stone Mountain, *Eggert* 39, *Hitchcock* 1354, 1360; Augusta, *Cuthbert* 388.

Tennessee: Knoxville, *Ruth* 63; Ducktown, *Chambliss* 89.

Alabama: Auburn, *Earle & Baker* in 1897.

Mississippi: Jackson, *Hitchcock* 1303.

Arkansas: Fulton, *Bush* 2350 (Gray Herb.).

Louisiana: Shreveport, *Hitchcock* 1249.

Texas: Denison, *Bebb* 2663.

83. Panicum perlongum Nash.

Panicum perlongum Nash, Bull. Torrey Club **26**: 575. 1899. "On prairies and dry soil, Illinois to North Dakota, south to Indian Territory. Type collected in Indian Territory at Creek Nation, by M. A. Carl[e]ton, April 25, 1891, No. 98." The type, in Nash's herbarium, consists of five clumps of several culms each, 7 to 40 cm. high, with mature primary and immature secondary panicles, and spikelets 3 to 3.2 mm. long.

Panicum pammeli Ashe, N. C. Agr. Exp. Sta. Bull. 175: 116. 1900. "Prairies of Iowa, June." The type, in Ashe's herbarium, collected by R. I. Cratty, June 12, 1881, has spikelets 3.1 to 3.2 mm. long.

DESCRIPTION.

Vernal form similar to that of *P. depauperatum*, more strict in habit, and in smaller tufts, more constantly pilose and usually papillose, the blades on the average longer and narrower, sometimes 25 cm. long, pubescent on the lower surface; panicles smaller and narrower, the branches erect, hence appearing more densely flowered; spikelets 2.7 to 3.2 mm. long, 1.6 to 1.7 mm. wide, oval, blunt, sparingly pilose; first glume one-fourth to one-third the length of the spikelet, acute or obtuse; second glume and sterile lemma equal, obtuse, not extended beyond the fruit, strongly 7 to 9-nerved; fruit 2.4 mm. long, 1.5 to 1.6 mm. wide, obovate-oval, rounded and minutely umbonate at the summit.

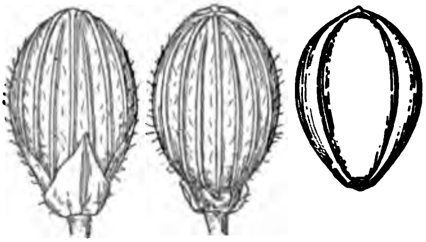


FIG. 138.—*P. perlongum*. From type specimen.

Autumnal form with secondary panicles usually more numerous than in *P. depauperatum* and sometimes produced from the second node.

DISTRIBUTION.

Prairies and dry soil, Michigan and Manitoba to Texas.

INDIANA: Elkhart County, *Deam* 6753.[a]

ILLINOIS: Hanover, *Gleason & Gates* 2530; Naperville, *Umbach* 1670; Wady Petra, *V. H. Chase* 460, 1158, 1731, in Kneucker Gram. Exs. 547; Peoria, *Brendel*, *McDonald* 18.

MICHIGAN: Keweenaw County, *Farwell* 755.

WISCONSIN: Racine, *Wadmond* in 1901.

MINNESOTA: Lake City, *Manning* in 1883 (Gray Herb.).

MANITOBA: Lake Winnipeg Valley, *Bourgeau* in 1837 (Gray Herb.).

SOUTH DAKOTA: Custer, *Rydberg* 1100; Clark, *Griffiths* 863.

IOWA: Ames, *Ball* 30, 145; Clinton, *Vasey;* Iowa City, *Somes* 245.

NEBRASKA: Ewing, *Bates* 1120.

MISSOURI: Lees Summit, *Bush* 3089.

KANSAS: Manhattan, *Hitchcock* 2501, 2509.

TEXAS: Llano County, *Nealley* 79; Wallisville, *Wallis* 38.

OKLAHOMA: Creek Nation, *Carleton* 98.

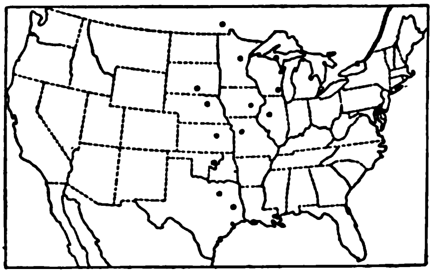


FIG. 139.—Distribution of *P. perlongum*.

---

[a] This specimen and those of *P. xalapense*, *P. ashei*, and *P. commutatum* from Indiana were received too late for representation in the maps.

84. **Panicum linearifolium** Scribn.

Panicum linearifolium Scribn. in Britt. & Brown, Illust. Fl. **3**: 500. *f. 268a*. June, 1898. "Dry soil, especially hillsides, New York and New Jersey to Missouri." This was again published[a] as "n. sp." a few days later. "New England, southward to Virginia and westward to Texas." Both descriptions state that the sheaths are glabrous or pilose, both illustrations indicate pilose sheaths. The type, in the National Herbarium, is marked "*P. linearifolium* Scribn. Type." in Scribner's handwriting, and is labeled "Washington, D. C., Vasey, 1882," but was probably collected in Maryland, along the Potomac northwest of Washington, where this species is frequent in rocky woods. The specimen is a tuft of culms 30 to 40 cm. high, with pilose sheaths, mature primary panicles, and much reduced, nearly hidden secondary ones. The spikelets are 2.2 to 2.4 mm. long.

DESCRIPTION.

Vernal form light green, in dense tufts, often surrounded by the withered, persistent, more or less curled leaves of the previous year, the culms readily separating, 20 to 45 cm. high, very slender, erect, spreading or almost drooping at the summit, glabrous, minutely puberulent or rarely pilose; sheaths usually equaling or exceeding the internodes, sparsely to densely papillose-pilose, the papillæ often obscure; blades elongated and erect, usually overtopping the panicles until maturity, 10 to 35 cm. long (the lower shorter), 2 to 4 mm. wide, scabrous on both surfaces or often pubescent on the lower, rarely on the upper surface, usually ciliate near the base with long hairs; panicles finally long-exserted, 5 to 10 cm. long, half to two-thirds as wide, rather few-flowered, the scabrous, flexuous branches remote, ascending; spikelets 2.2 to 2.7 mm. long, 1.3 to 1.5 mm. wide, oblong-elliptic, obtuse, sparsely pilose with weak, spreading hairs; first glume one-fourth to one-third the length of the spikelet, obtuse, or pointed by the inrolling of the margins; second glume and sterile lemma equal and equaling the fruit at maturity; fruit 2 to 2.1 mm. long, 1.2 mm. wide, oval, obscurely umbonate at the summit.

Autumnal form similar, the reduced secondary panicles produced on short basal branches mostly concealed in the tuft of basal leaves.

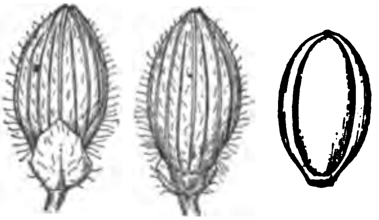


FIG. 140.—*P. linearifolium*. From type specimen.

While the typical form of this species is quite distinct from *P. depauperatum*, occasional specimens, such as the following, seem to be intermediate between the two: *Burnham* 24, *Bush* 1555, 4734; *Hitchcock* Pl. Kans. 880; *Plank* 40. In these the spikelets are about 3 mm. long and sometimes obscurely short-pointed.

The following specimens have the sheaths glabrous or nearly so and approach the closely allied *P. werneri*: *Bissell* 5541, *Bush* 4411A, *Deam*, Wells County, Indiana, in 1901, *Hitchcock* 598, *Pollard*, Washington, D. C., in 1897, *Rose & Painter* 8153.

DISTRIBUTION.

Dry woods, Maine to Kansas, south to Georgia and Texas.

MAINE: Chesterville, *Chase* 3326; Fayette, *Chase* 3393; Canton, *Parlin* 1971.
VERMONT: Barnet, *Blanchard* in 1888; Burlington, *Hitchcock* 598.
MASSACHUSETTS: Williamstown, *Churchill* in 1901.
CONNECTICUT: Southington, *Andrews* 49, *Bissell* 5541, 5542; Fairfield, *Eames* in 1895,

---

[a] Scribn. U. S. Dept. Agr. Div. Agrost. Bull. **11**: 42. *pl. 1.* July 20, 1898.

New York: Thousand Islands, *Robinson & Maxon* 20; Oxford, *Coville* in 1884; Washington County, *Burnham* 24; Hempstead, *Bicknell* in 1903; Jamaica, *Bicknell* in 1905.

Ontario: Galt, *Herriot* 34.

New Jersey: Wildwood, *Pollard* in 1897; Morris County, *Mackenzie* 1339, 1398; Springdale, *Pretz* 1882.

Pennsylvania: Newtown, *Smith* 156; York County, *Rose & Painter* 8153.

Ohio: Barnesville, *Laughlin* 6906.

Indiana: Wells County, *Deam* in 1901; Kosciusko County, *Deam* 3218.

Illinois: Wheaton, *Moffatt* 255 in 1893; Makanda, *Gleason* in 1903; Cobden, *Waite* in 1885.

Michigan: Keweenaw County, *Farwell* 597; Agricultural College, *Lake* in 1888.

Minnesota: Lake Kilpatrick, *Ballard* in 1893 (Univ. Minn. Herb.).

Missouri: Monteer, *Bush* 731 in part, 742, 2881a, 4734; Eagle Rock, *Bush* 153; Pleasant Grove, *Bush* 320; Carthage, *Bush* 1555; Swan, *Bush* 4533, 4549; Chadwick, *Bush* 4411, 4411A; Pilot Knob, *Ward* in 1878.

Kansas: Manhattan, *Hitchcock* 2506, Pl. Kans. 880.

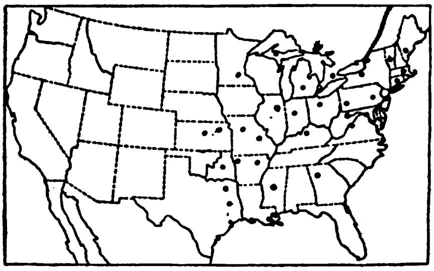


Fig. 141.—Distribution of *P. linearifolium.*

Maryland: Cabin John, *Chase* 5411; Plummers Island, *Hitchcock* 597; Great Falls, *Chase* 2303.

District of Columbia: *Pollard* in 1897, *Vasey* in 1882.

West Virginia: Harpers Ferry, *Hitchcock* in 1905.

Georgia: Silver Creek, *Biltmore Herb.* 7079a (Biltmore Herb.).

Kentucky: Lexington, *Short* 8 (Gray Herb.).

Mississippi: Without locality, *Johnson* in 1886.

Arkansas: Benton County, *Plank* 45, 55, 96, 100, 143, 157; northwest Arkansas, *Harvey* 7.

Louisiana: New Orleans, *Ridell* (Gray Herb.).

Texas: Palestine, *Plank* 40; Jacksonville, *Plank* in 1894; without locality, *Nealley* in 1890, *Wright* (Gray Herb.).

Oklahoma: Sapulpa, *Bush* 1107 in 1895 (Mo. Bot. Gard. Herb.).

85. **Panicum werneri** Scribn.

Panicum werneri Scribn. in Britt. & Brown, Illust. Fl. **3**: 501. *f. 268b.* 1898. "Dry knolls in swamps, New York and Ohio." The type, in Hitchcock's herbarium, is a specimen collected by William C. Werner, near Painesville, Ohio, 1889, no. 60. It consists of eight simple culms, mostly lacking the base, glabrous except for the sparsely bearded nodes, with over-mature panicles; spikelets almost glabrous, the sparse hairs obscure.

Panicum delawarense Ashe, N. C. Agr. Exp. Sta. Bull. **175**: 116. 1900. "Dry soil near Centreville, Del. Collected by A. Commons, July 6, 1878." The type, in Ashe's herbarium, consists of four solitary culms with long-exserted, over-mature panicles, and sparsely pubescent spikelets.

DESCRIPTION.

Vernal form similar to that of *P. linearifolium*, typical specimens differing as follows: Culms stiffer, nodes usually sparingly pilose, sheaths glabrous, often shorter than the internodes; blades firmer, shorter and wider, 15 cm. long or less, the lower culm blades

3.5 to 6 cm. long, 3 to 6 mm. wide, a few long hairs at the rounded base, scabrous on both surfaces, not pubescent; spikelets 2.1 to 2.4 mm. long, 1.2 to 1.3 mm. wide, nearly or quite glabrous.

Autumnal form similar to the vernal, remaining simple or late in the season bearing simple branches from the lower, rarely from the basal, nodes.

The above-mentioned types are both of this form, but material examined shows a much less clear distinction from *P. linearifolium*, with which this species seems to intergrade. The division is here based on a combination of stiffer habit, glabrous sheaths, shorter, broader, and firmer blades, and less pubescent spikelets. In many specimens, however, having the other characters enumerated the blades are as long as in many specimens of *P. linearifolium*. The following represent these intergrading specimens: *Biltmore Herb.* 8342, *Chase* 3299, 3382, *Jones*, Burlington, Vermont, in 1892, *Knight* 55, 57, *Parlin* 1190, *Porter*, Easton, Pennsylvania, in 1895, 1897, and 1898.

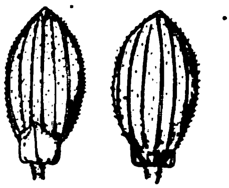


FIG. 142.—*P. werneri*. From type specimen.

In habit, especially as seen in the field, *P. werneri* often suggests *P. depauperatum*. The following specimens, with slightly pointed spikelets 2.5 to 2.8 mm. long, approach that species: *Briggs* 1248, *Graves* 7, *Eggleston* 1757, *H. W. Merrill* 44.

DISTRIBUTION.

Sterile woods and knolls, Maine to Minnesota, south to Ohio and Texas.

Maine: Penobscot County, *Fernald* 506, *Knight* 55, 57; Chesterville, *Chase* 3299; Fayette, *Chase* 3382; North Berwick, *Parlin* 1190, 1502, 1806; Hiram, *H. W. Merrill* 44, 47; Orono, *Briggs* 1248.

New Hampshire: Laconia, *Carter* 101, 242 (Hitchcock Herb.).

Vermont: Burlington, *Jones* in 1892; *Eggleston* 1757.

Massachusetts: Sheffield, *Hoffmann* in 1901.

Connecticut: Ledyard, *Graves* 16; Volunteer, *Graves* 17; Franklin, *Woodward* in 1906; Southington, *Chamberlain & Bissell* in 1903; Waterford, *Graves* 7.

New York: Tripoli, *Burnham* in 1897; Ithaca, *Ashe, Rowlee* in 1892; New York, *Bicknell* in 1895.

Ontario: Toronto, *Biltmore Herb.* 8342; Kingston, *Fowler* in 1898; Kingston Mills, *Klugh* in 1907; Algonquin Park, *Macoun* 21957.

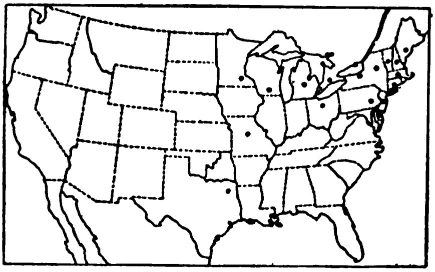


FIG. 143.—Distribution of *P. werneri*.

New Jersey: Berkeley Heights, *Mackenzie* 2251.

Pennsylvania: Easton, *Porter* in 1895, 1897, and 1898.

Ohio: Painesville, *Werner* 60, 65 (both in Hitchcock Herb.).

Michigan: Flint, *Clark* (Field Mus. Herb.).

Wisconsin: Rainbow Rapids, *Cheney* 1345.

Minnesota: Chisago County, *Sandberg* in 1886.

Missouri: Swan, *Bush* 2913, 2926.

Delaware: Centerville, *Commons* 358.

Texas: Dallas, *Reverchon* in 1876 (Gray Herb.).

Laxiflora.—Plants light green, vernal culms 10 to 40 cm. high, numerous in tufts; blades flat, soft, mostly ciliate, basal blades shorter, but not forming true rosettes in the autumn; ligules nearly obsolete; primary panicles long-exserted; spikelets 1.3 to 2.3 mm. long, obovate, obtuse, turgid, 5 to 7-nerved. Autumnal form freely branching near the base, forming close, flat, soft tufts, the reduced panicles often exceeded by the leaves.

Sheaths retrorsely pilose; spikelets papillose-pilose.
  Panicle branches ascending, forming a rather compact panicle; spikelets 1.6 mm. long.................... 87a. *P. xalapense strictirameum.*
  Panicle branches loosely spreading.
    Blades ciliate and more or less pilose on the surface; spikelets 2 mm. long........................ 87. *P. xalapense.*
    Blades glabrous or nearly so on the surface and margin; spikelets 2.2 mm. long.................. 86. *P. laxiflorum.*
Sheaths not retrorsely pilose; spikelets pubescent or glabrous.
  Spikelets pubescent, about 2 mm. long.................. 88. *P. ciliatum.*
  Spikelets glabrous.
    Blades glabrous on the surface...................... 89. *P. polycaulon.*
    Blades pilose on the surface........................ 90. *P. strigosum.*

86. Panicum laxiflorum Lam.

Panicum laxiflorum Lam. Encycl. **4**: 748. 1798. "Cette plante est dans l'herbier du Muséum. Je la crois d'Amérique Septentrionale." The type, labeled in Lamarck's hand "panicum laxiflorum lam. dict.," is in the Lamarck Herbarium. It consists of two culms, each with a loose terminal panicle, one leafless, the other with a single blade glabrous on both surfaces; the spikelets are 2.2 mm. long, papillose-pilose, the fruit covered by the second glume and sterile lemma. These characters indicate not the species that has been called by this name in America, but the one of more restricted southern range.

Panicum pyriforme Nash, Bull. Torrey Club **26**: 579. 1899. "Type collected by the writer in clay soil, at Orange Bend,[a] Lake Co., Florida, March 12-31, 1894, no. 239." The type, in Nash's herbarium, consists of a clump of three culms, 15 to 45 cm. high. The description states that the blades are glabrous on the margin, but the type, as well as duplicate types in the National and Columbia University herbaria and in Hitchcock's herbarium, has several sparingly ciliate blades; the spikelets are said to be "about 2.5 mm. long" but measure 2.2 mm.

Panicum aureum Muhl.; Scribn. & Merr. U. S. Dept. Agr. Div. Agrost. Circ. **27**: 4. 1900. This is mentioned as a synonym of *P. laxiflorum* Lam. The type specimen is in the Muhlenberg Herbarium in folio "187, *Panicum strigosum*." It is labeled "117 *P. aureum* M 115."

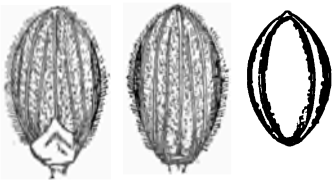


FIG. 144.—*P. laxiflorum.* From type specimen.

DESCRIPTION.

Vernal form with slender culms 20 to 60 cm. high, erect, or the lower nodes often geniculate, glabrous; nodes bearded with reflexed hairs; sheaths shorter than the internodes, conspicuously retrorsely pilose; blades mostly 10 to 18 cm. long, 7 to 12 mm. wide, acuminate, narrowed toward the base, glabrous on both surfaces and on the margins, or sparsely ciliate; panicles long-exserted, but sometimes equaled by the long upper blades, 8 to 12 cm. long, nearly as wide, lax, few-flowered, the branches flexuous, spreading, the lower often deflexed; spikelets 2.2 to 2.3 mm. long, 1.2 mm. wide, oblong-obovate, obtuse, first glume one-third to two-fifths as long as the spikelet; second glume and sterile lemma equal and covering the fruit at maturity, papillose-pilose; fruit 1.8 mm. long, 1.2 mm. wide, obovate-elliptic, minutely umbonate.

---

[a] The locality of *Nash* 239 as given on the label is "vicinity of Eustis." Orange Bend is a few miles northwest of Eustis.

Autumnal form branching at the base, forming soft, spreading tufts, the sheaths overlapping and the blades but little or not at all reduced, much exceeding the secondary panicles; spikelets more turgid and obtuse than the primary ones.

A specimen collected by Lester F. and Rosamond Ward at Palatka, Fla., in 1891, and another from Dr. Chapman, collected in Florida, without locality or date, have pilose blades like those of *P. xalapense;* the spikelets are 2.2 to 2.3 mm. long, and the fruit is covered by the equal second glume and sterile lemma.

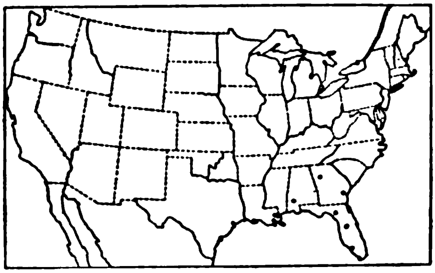


FIG. 145.—Distribution of *P. laxiflorum.*

DISTRIBUTION.

Rich or damp woods, Georgia to Florida and Alabama.

GEORGIA: Stone Mountain, *Eggert* 42; Ocmulgee River Swamp, below Macon, *Small* in 1895.

FLORIDA: Monticello, *Combs* 327; Lake City, *Nash* 2156, *Hitchcock* 1009; Gainesville, *Chase* 4217, *Combs* 743; Mabel, *Curtiss* 6635 in part;[a] Grasmere, *Combs* 1064; Spruce Creek, *Curtiss* in 1885; Manatee, *Tracy* 7383; Palmetto, *Tracy* 6707; Eustis, *Nash* 239, 2034; Orange Bend, *Chase* 4101; Dunnellon, *Combs* 909; Titusville, *Chase* 4023; Ormond, *Hitchcock* 111.

ALABAMA: Springhill, *Mohr* in 1895.

87. Panicum xalapense H. B. K.

Panicum xalapense H. B. K. Nov. Gen. & Sp. **1**: 103. 1816. "*Crescit in regno Mexicano prope Xalapa et montem Macultepec.*" The type, in the Bonpland Herbarium, is labeled, "In regno Mexicano prope xalapa, regione temperata."

Panicum pumilum Bosc; Nees, Agrost. Bras. 228. 1829, not Lam. 1798. "(Herb. Willd.) Habitat in America boreali." This is mentioned as a synonym under *P. laxiflorum* Lam. The specimen referred to, in the Willdenow Herbarium, is the vernal form.

Panicum rariflorum Rupr. Bull. Acad. Roy. Belg. **9^2**: 240. 1842, not Lam. 1798. "(Coll. H. Gal[eotti] No. 5733). Nous avons trouvé cette nouvelle espèce * * * pres de Xalapa." This is a nomen nudum. The type, in the Brussels Herbarium, is a poor specimen, but undoubtedly belongs to this species.

Panicum ruprechti Fourn. Mex. Pl. **2**: 21. 1886, not Fenzl, 1854. This name is based on the type of *P. rariflorum* Rupr., "(GAL[EOTTI] n. 5733)." It was earlier listed without description by Hemsley,[b] based on "*Panicum rariflorum* Rupr. * * * non Lam.," that is, a nomen nudum based on a nomen nudum.

Panicum caricifolium Scribn.; Ashe, Journ. Elisha Mitchell Soc. **15**:[c] 57. 1898. This is given as a synonym of *P. laxiflorum* Lam. "As distributed by Kearney

---

[a] Curtiss included *P. xalapense* also under this number. U. S. National Herbarium no. 388470 is a sheet of *Curtiss* 6635, with a tuft of each species.

[b] Biol. Centr. Amer. Bot. **3**: 495. 1885.

[c] The title page, vol. 15, pt. 1 (pp. 1–75) is incorrectly numbered 4 (IV).

(Washington, D. C., May, 1897)." The Kearney specimen referred to could not be found in Ashe's herbarium, but other specimens there under this name are *P. xalapense*, as are specimens in the National Herbarium bearing the name "*Panicum caricifolium*" in Scribner's writing.

This is the species described as *P. laxiflorum* by American authors.

DESCRIPTION.

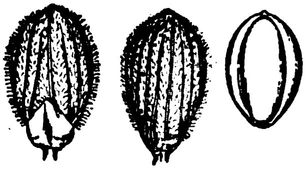


FIG. 146.—*P. xalapense*. From type specimen.

Vernal form similar to *P. laxiflorum* in texture and habit; culms and blades on the average shorter, the blades pilose on one or both surfaces or nearly glabrous, usually short-ciliate, the uppermost more or less convolute at base around the culm; panicles hardly so few-flowered; spikelets 1.9 to 2 mm. long, 1.1 mm. wide, oblong-obovate, obtuse, the first glume one-fourth to one-third as long as the spikelet; second glume and sterile lemma pilose, less prominently papillose, the glume shorter than the fruit, the latter 1.5 mm. long and 1 mm. wide, oval, minutely umbonate.

Autumnal form as in *P. laxiflorum*, but forming usually denser tufts with shorter leaves.

This species is conspicuously retrorsely pilose on the sheaths. Canby's no. 106, Stone Mountain, Ga., in the Gray Herbarium, is exceptional in having almost glabrous sheaths.

DISTRIBUTION.

Woods, Maryland, Illinois, and Missouri to Florida, Texas, and Mexico; also in Santo Domingo.

INDIANA: Clarke County, *Deam* 6883.

ILLINOIS: Jackson County, *French* in 1905.

MISSOURI: Campbell, *Bush* 749 in part; Swan, *Bush* 4638; Jefferson County, *Eggert* 127; Pacific, *Kellogg* 19.

MARYLAND: Cabin John, *Chase* 5412, *Chase* in Kneucker Gram Exs. 549; west District Line, *Hitchcock* 343; Great Falls, *Chase* 2316, 2320.

VIRGINIA: Richmond, *DeChalmot;* Smyth County, *Small* in 1892; Princess Anne County, *Kearney* 1033, 1104, 1179, 1308, 1467, *Pollard & Maxon* in 1900.

NORTH CAROLINA: Biltmore, *Biltmore Herb.* 2993a; Madison County, *Biltmore Herb.* 2993c; Raleigh, *Ashe;* Chapel Hill, *Ashe, Chase* 3057; Wilmington, *Chase* 3111, 3117, 3118.

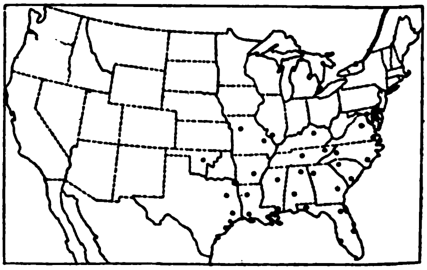


FIG. 147.—Distribution of *P. xalapense*.

SOUTH CAROLINA: Orangeburg, *Hitchcock* 1391, 1415, 1424; Clemson College, *House* 2177.

GEORGIA: Thomson, *Bartlett* 1453; Rome, *Curtiss* 6791; Warm Springs, *Tracy* 8867; Augusta, *Cuthbert* 1119, *Kearney* 212; Union, *Harper* 1085; Clarke County, *Harper* 77; Dublin, *Harper* 2140; Stone Mountain, *Chase* 4517, *Eggert* 86, *Harper* 183, *Hitchcock* 1361, *Small* in 1893, *Wilson* 14.

FLORIDA: Jacksonville, *Curtiss* 6602; Lake City, *Combs & Rolfs* 141; Tallahassee, *Combs* 390, *Kearney* 75; Sanford, *Hitchcock* 773; Titusville, *Chase* 4009; Dade County, *Curtiss* 5537, *Eaton* 589, 831, *Hitchcock* 659, 673, *Tracy* 8849; Manatee County, *Tracy* 6694; Sarasota Key, *Tracy* 7202; Alva, *Hitchcock* Lee Co.

Pl. 480; Tampa, *Hitchcock* 927, 935; Myers, *Hitchcock* 906; without locality, *Rugel* 392.

KENTUCKY: Harlan County, *Kearney* 53.

TENNESSEE: Knoxville, *Ruth* 68; Nashville, *Gattinger* in 1880; Wolf Creek, *Kearney* in 1894; Cocke County, *Kearney* 970.

ALABAMA: Auburn, *Earle & Baker* in 1897; *Tracy* 3759; Tuskegee, *Carver* 55; Scottsboro, *Chase* 4506.

MISSISSIPPI: Meridian, *Tracy* 3267; Dekalb, *Tracy* 3255, 3256; Fairport, *Tracy* 3211; Acona, *Tracy* 2058; Starkville, *Tracy* 1410, 1753; Enterprise, *Tracy* 3267, 3287; Jackson, *Hitchcock* 1310; Biloxi, *Hitchcock* 1073, *Tracy* 2032, 4574, 4588, 6358.

ARKANSAS: Fulton, *Bush* 1440; Texarkana, *Bush* 2488.

LOUISIANA: Calhoun, *Ball* 62, *Hitchcock* 1260; Coushatta, *Ball* 122; Shreveport, *Cocks* 3511, *Hitchcock* 1239; Lake Charles, *Hitchcock* 110, 1124; Opelousas, *Langlois* 36; New Orleans, *Drummond* 456, 457.

TEXAS: Waller County, *Hitchcock* 1182, *Thurow* in 1898 and 1906; Dallas, *Reverchon* 93, *Bush* 651; Houston, *Bebb* 1236; Denison, *Bebb* 1457; Columbia, *Bush* 1273; *Heller* 4085, 4209; Galveston, *Plank* 91; Palestine, *Plank* 51; *Nealley* in 1884.

OKLAHOMA: Wister, *Hitchcock* in 1903; Poteau, *Hitchcock* in 1903 (both in Hitchcock Herb.).

MEXICO: Jalapa, *Pringle* 8083, *C. L. Smith* 1752; Hidalgo, *Pringle* 13250; Orizaba, *Nelson* 201; Chinantla, *Liebmann* 328; Valley of Córdoba, *Bourgeau* 2162; *Galeotti* 5733 (Brussels Herb.), *Schiede & Deppe* "acuminatum c;" *Seler* 2160 (both in Berlin Herb.).

SANTO DOMINGO: Near Jarabaco, *Eggers* 2129.

87a. Panicum xalapense strictirameum subsp. nov.

DESCRIPTION.

Differing from *P. xalapense* in having ovoid, more compact panicles with ascending branches, somewhat smaller spikelets, 1.7 mm. long, shorter, narrower blades than common in the species, and shorter culms.

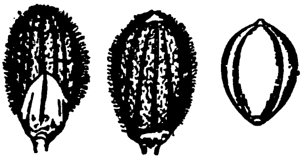


FIG. 148.—*P. xalapense strictirameum*. From type specimen.

Autumnal form in smaller, shorter tufts.

Type U. S. National Herbarium no. 558449, collected April 28, 1906, Jackson, Miss., by A. S. Hitchcock (no. 1311). This specimen has short, appressed blades, the uppermost 2.5 to 4 cm. long, and long-exserted panicles 2 to 3 cm. long. This form was abundant on wooded hills in the outskirts of Jackson, where *P. xalapense* also grew, but from which it differed conspicuously in the form of the panicle. Most of the other specimens referred to this subspecies are less characteristic, but are smaller, with smaller blades than the species usually has, though occasional specimens of *P. xalapense* have the smaller blades of the subspecies.

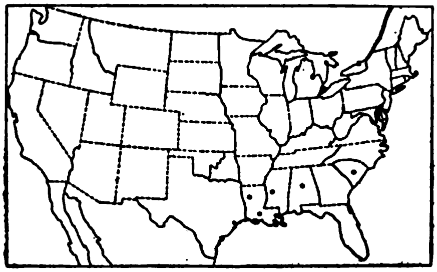


FIG. 149.—Distribution of *P. xalapense strictirameum*.

DISTRIBUTION.

Dry woods, South Carolina to Louisiana.

SOUTH CAROLINA: Lancaster, *House* 2551.

ALABAMA: Auburn, *Hitchcock* 1333.

MISSISSIPPI: Jackson, *Hitchcock* 1311; Madison, *Tracy* 1478.

LOUISIANA: Calhoun, *Hitchcock* 1290; West Feliciana, *Cocks* 3510.

88. Panicum ciliatum Ell.

Panicum ciliatum Ell. Bot. S. C. & Ga. 1: 126. 1816. No locality is cited. The type, in the Elliott Herbarium, consists of two short culms with short-exserted, immature panicles.

Panicum leucoblepharis Trin. Clav. Agrost. 234. 1822. Trinius's full citation is as follows: "1177. Gr. miliaceum americanum, majus, panicula minore. *Pluk. Phytogr. p.* 176. *Tab.* 92. *f.* 7. *Mant. p.* 95. (*excl. Syn. Sloan. ut ipse Sloaneus monet*). *Citatur a Gronowio* (*Virg. p.* 12.) *ad* Pan. paniculatum floribus muticis; *sed quid illud? Figura bene convenit cum Panico quodam herb. notsr.* [*nostr.*] *ex Amer. bor.* (Pan. leucoblepharis *m.*) *praeter cilia foliorum elegantissima, rigidiuscula.—Synon. Recchii ap. Pluk. admodum dubium.*" Plukenet cites "Nov. Hispan. Terent. apud *Recc.* 373" after the phrase name cited by Trinius. The figure, which is not identifiable, represents blades with cordate bases and no ciliæ. A specimen in the Trinius Herbarium is labeled: "ab Enslino in Am. bor. l. dt. cl. Trattinick." This is typical *P. ciliatum* Ell. Trinius[a] further describes this species, citing the Enslin specimen. Since the Plukenet figure can not certainly be identified, the Enslin specimen has been chosen as the type.

Panicum ciliatifolium Kunth, Rév. Gram. 1: 36. 1829. Based on *P. ciliatum* Ell. without description or explanation as to reason for change of name.

Panicum ciliatifolium Desv. Opusc. 88. 1831. "Habitat in America boreali." The type could not be found in the Desvaux Herbarium, but the description leaves no doubt as to the identity of the species. Desvaux cites *P. ciliatum* Ell. with a query. He uses the name *ciliatifolium* apparently without reference to its previous use by Kunth for the same species.

DESCRIPTION.

Vernal form with culms 5 to 30 cm. high, erect or spreading, sparsely pilose toward the summit, the nodes glabrous; sheaths ciliate on the margin, otherwise glabrous, usually overlapping; blades 3 to 6 cm. long, 3 to 8 mm. wide, the uppermost often much smaller, lanceolate, ciliate on the margin with stiff hairs 2 to 3 mm. long, arising from papillæ, panicles 3 to 4 cm. long, about as wide, with more numerous spikelets than those of *P. xalapense*, the branches spreading, flexuous, the axis pilose; spikelets 1.8 to 2 mm. long, 1 mm. wide, obovate-elliptic; first glume half the length of the spikelet, subacute; second glume and sterile lemma equal, not exceeding the fruit, villous; fruit 1.7 to 1.8 mm. long, 0.9 mm. wide, elliptic, the apex minutely umbonate.

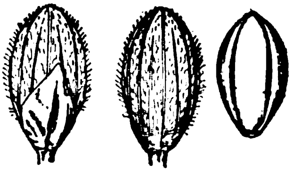


FIG. 150.—*P. ciliatum*. From type specimen.

Autumnal form in flat, soft mats, similar to that of *P. xalapense*.

A specimen of *Nash* 807 from Eustis, Fla., in Hitchcock's herbarium, which is an autumnal form of this species, consists of two small tufts, of which one has glabrous spikelets, the other pubescent spikelets; the plants are otherwise identical; the spikelets are of the same size and the fruits of the glabrous ones are umbonate as in the pubescent ones. So far as examined, other specimens of this number have pubescent spikelets. Two specimens, *Chase* 3131 from Wilmington, N. C., and *Hitchcock* 1062 from Biloxi, Miss., with pubescent spikelets only 1.6 mm. long are intermediate between *P. ciliatum* and *P. polycaulon* and might perhaps be considered as a form of *P. polycaulon* with pubescent spikelets.

---

[a] Gram. Pan. 219. 1826.

DISTRIBUTION.

Low pine lands and hammocks, North Carolina to Florida and Louisiana.

NORTH CAROLINA: Onslow County, *Chase* 3184; Roanoke Island, *Chase* 3214, 3226; New Hanover County, *Chase* 4583, *Hitchcock* 1430, 1451, 1490, *Kearney* 250.

SOUTH CAROLINA: Orangeburg, *Hitchcock* 342, 1371.

FLORIDA: Baldwin, *Combs* 57, *Hitchcock* 991, 993, 1000; Lake City, *Combs* 100, 137, *Hitchcock* 1019, 1036; Madison, *Combs* 288; Eustis, *Nash* 807.

ALABAMA: Flomaton, *Hitchcock* 1040; Mobile, *Kearney* 24.

MISSISSIPPI: Jackson County, *Kearney* 283, *Tracy* 162; Biloxi, *Chase* 4360, *Kearney* 326 in part; Avondale, *Tracy* 4582.

LOUISIANA: New Orleans, *Drummond* (Gray Herb.).

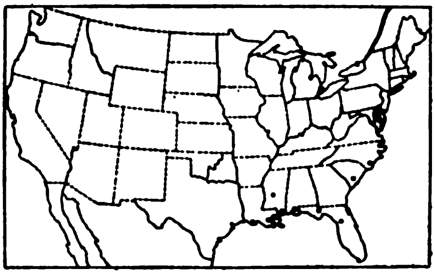


FIG. 151.—Distribution of *P. ciliatum*.

89. Panicum polycaulon Nash.

Panicum polycaulon Nash, Bull. Torrey Club **24**: 200. 1897. "Type specimen collected by the writer on August 20, 1895, in the flatwoods at Tampa, Florida, No. 2420a." The type, in Nash's herbarium, consists of a spreading tuft of numerous culms, 10 to 17 cm. high, the overmature panicles nearly devoid of spikelets, and the first glume half the length of the spikelets, which are 1.6 mm. long.

DESCRIPTION.

Vernal form similar to that of *P. ciliatum*, culms rarely over 20 cm. high, glabrous, but pilose in the long-exserted panicle; sheaths sparingly ciliate; blades on the average narrower than those of *P. ciliatum;* spikelets 1.5 to 1.6 mm. long (exceptionally as much as 2 mm. long), 0.8 mm. wide, obovate, blunt, glabrous; first glume one-third to half the length of the spikelet, subacute; second glume and sterile lemma strongly nerved; fruit 1.4 mm. long, 0.8 mm. wide, elliptic, subacute, not umbonate.

Autumnal form in flat, soft mats, similar to those of *P. xalapense*, but smaller.

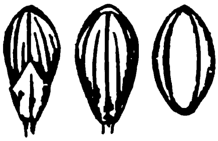


FIG. 152.—*P. polycaulon*. From type specimen.

The type specimens of *P. ciliatum* and *P. polycaulon* differ in the spikelet characters, the former having pubescent spikelets 2 mm. long and the latter having glabrous, more obovate, turgid spikelets 1.6 mm. long. Our numerous specimens, however, do not show these constant differences. Occasional specimens have glabrous spikelets as much as 2 mm. long. A comparatively few specimens have pubescent spikelets that are of the smaller size. We have not found any distinct differences in habit that can be coördinated with the spikelet characters. The range of the two forms is somewhat different, *P. ciliatum* extending from North Carolina to northern Florida, and *P. polycaulon* throughout Florida and southward into Cuba. It will be observed that the ranges of the two overlap in northern Florida and it is here that the intermediate specimens are found. A specimen from Tampa, Florida, *Hitchcock* 933, has blades nearly destitute of ciliæ. The following specimens have spikelets nearly or quite 2 mm. long: FLORIDA: Kalamazoo, *Hitchcock* 763; Lakeland, *Hitchcock* 836; Dunedin, *Tracy* 6698. MISSISSIPPI: Mississippi City, *Hitchcock* 1101.

DISTRIBUTION.

Flatwoods and hammocks, Florida and along the Gulf coast to Mississippi; also in Cuba.

Florida: Live Oak, *Tracy* 6727; Washington County, *Combs* 649 in part; Apalachicola, *Biltmore Herb.* 6022a, *Kearney* 96; Orange County, *Baker* 68, *Combs & Baker* 1086, *Curtiss* 6627; Orange Bend, *Chase* 4104; Titusville, *Chase* 3967; Dunedin, *Tracy* 6698, 6723; Kalamazoo, *Hitchcock* 762; Sanford, *Hitchcock* 771, 772, 827; Manatee, *Hitchcock* 950, 974; Lakeland, *Hitchcock* 843; Tampa, *Combs* 1338, *Hitchcock* 933, 943; Hog Island, *Tracy* 6710 in part; Lemon Bay, *Tracy* 7188 in part; Sneeds Island, *Tracy* 6692; Santa Rosa Island, *Tracy* 8411; Myers, *Hitchcock* 868, 903, 923½, Lee Co. Pl. 482; Miami, *Chase* 3885, *Hitchcock* 112, 665, 711, 721; Homestead, *Hitchcock* 689½.

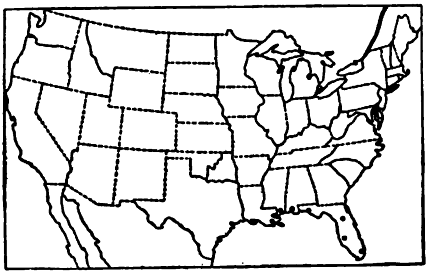


Fig. 153.—Distribution of *P. polycaulon.*

Alabama: Fort Morgan, *Tracy* 7208.

Mississippi: Horn Island, *Tracy* 6470; Petit Bois Island, *Tracy* 4606; Ocean Springs, *Skehan* in 1895; Biloxi, *Chase* 4364.

Cuba: Herradura, *Hitchcock* 115; without locality, *Wright* 3875 in part; Isle of Pines, *Palmer & Riley* 990.

Porto Rico: Near Piedra Blanca, *Sintenis* 5724.

90. Panicum strigosum Muhl.

Panicum strigosum Muhl. in Ell. Bot. S. C. & Ga. **1**: 126. 1816. Elliott cites no locality. The type, in the Elliott Herbarium, is a single immature plant, the panicle only short-exserted. The accompanying label reads "Panicum strigosum Muhl. Hab. in humidis. Car: & Georg: Flor: Ma-Jun:."

Panicum laxiflorum pubescens Vasey, Contr. Nat. Herb. **3**: 30. 1892. No locality nor specimen is cited. Only two specimens bearing this name in Vasey's writing can be found in the National Herbarium. One of these, *Curtiss* North American Plants No. H, Duval County, Florida, agrees well with Vasey's description; the other, a specimen of *P. xalapense*, does not agree with the description. The first is therefore chosen as the type.

Panicum longipedunculatum Scribn. Tenn. Agr. Exp. Sta. Bull. **7**: 53. *pl. 16. f. 61.* 1894. "Damp woods, White Cliff Springs [Tennessee], July 1890; Tullohoma, July, 1892. A large form of this species is represented by No. 3597* A. H. Curtiss N. Am. Pl." The first specimen cited, which is evidently the plant figured and which is chosen as the type, is in Hitchcock's herbarium. It consists of two tufts with slender culms 15 to 40 cm. high, more sparsely pilose than usual.

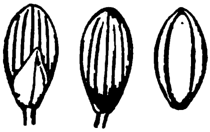


Fig. 154.—*P. strigosum.* From type specimen.

DESCRIPTION.

Vernal form similar to that of *P. ciliatum*, but having sparsely pilose culms and sheaths, bearded nodes, and blades on the average a little wider and more or less pilose on both surfaces; panicles larger, with pilose axis and branches, bearing more numerous, smaller, glabrous spikelets, the latter 1.3 to 1.5 mm. long, 0.7 mm. wide, obovate, less turgid than in other species of this group; first glume one-third to half the length of the spikelet; second glume and sterile lemma equal, faintly nerved; fruit 1.3 mm. long, 0.6 to 0.7 mm. wide, elliptic, subacute, not umbonate.

Autumnal form a dense mat with panicles scarcely rising above the leaves.

This species is variable as to pubescence. Some of the specimens from Cuba and Guatemala show only a few scattered hairs upon the surface of some of the blades, but these are conspicuously ciliate on the margin.

DISTRIBUTION.

Sandy woods, Virginia and Tennessee to Florida and Louisiana; also in Mexico, Guatemala, and Cuba.

VIRGINIA: Norfolk County, *Kearney* 1761.
NORTH CAROLINA: Roanoke Island, *Chase* 3244; Onslow County, *Chase* 3171; Wilmington, *Hitchcock* 1450, *Kearney* 282.
SOUTH CAROLINA: Aiken, *Ravenel.*
FLORIDA: Jacksonville, *Curtiss* 3597*, 4031; Washington County, *Combs* 567, 584.
TENNESSEE: White Cliff Springs, *Scribner* in 1890 (Hitchcock Herb.).
ALABAMA: Cullman County, *Eggert* 21; Gateswood, *Tracy* 8422; Flomaton, *Hitchcock* 1043.
MISSISSIPPI: Saratoga, *Tracy* 8402.
LOUISIANA: Lake Charles, *Hitchcock* 1162.
MEXICO: Minatitlan, *J. G. Smith* 555 (Hitchcock Herb.).
GUATEMALA: Secanquím, *Pittier* 257; Cuesta de Peixhá, *Pittier* 1800.
CUBA: El Guama, *Palmer & Riley* 213; without locality, *Wright* 3875 in part.

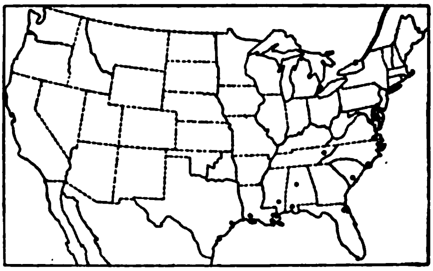


FIG. 155.—Distribution of *P. strigosum.*

Angustifolia.—Plants mostly dull grayish-green, cespitose; vernal culms erect or ascending from a spreading base, mostly 30 or 40 cm., rarely as much as 100 cm. high, appressed-villous at base or sometimes above, or rarely smooth even at base; ligules ciliate, less than 1 mm. long; blades narrow, ascending, usually firm and rigid, more or less striate with prominent nerves, and sometimes longitudinally wrinkled besides, often ciliate at the base; spikelets attenuate at base, rather strongly 7-nerved, usually pubescent, the hairs arising from bullate papillæ; first glume narrow and sheathing at base. Autumnal culms repeatedly branching, forming bushy crowns, these remaining erect or becoming decumbent or widely spreading; blades much reduced, often involute; a distinct rosette of basal leaves formed in the fall. Species of the Atlantic Coastal Plain.

Nodes bearded; plants grayish-villous; autumnal blades flat.
  Spikelets 2 mm. long.................................. 92. *P. chrysopsidifolium.*
  Spikelets 2.5 to 2.8 mm. long.......................... 93. *P. consanguineum.*
Nodes not bearded; plants villous only at base, or nearly glabrous; autumnal blades involute or flat.
  Autumnal blades flat; lower panicle branches spreading or deflexed.................................. 94. *P. angustifolium.*

- Autumnal blades involute; lower panicle branches more or less ascending.
  - Spikelets 3.3 to 3.5 mm. long, pointed .... 95. *P. fusiforme.*
  - Spikelets less than 3 mm. long, not pointed, or obscurely so.
    - Plants glabrous or nearly so; autumnal culms erect.
      - Spikelets subsecund along the suberect panicle branches .... 98. *P. neuranthum.*
      - Spikelets not subsecund; panicle loose and open .... 97. *P. ovinum.*
    - Plants pubescent, at least on the lower half.
      - Spikelets about 2.4 mm., rarely only 2.1 mm. long; vernal blades 7 to 12 cm. long; autumnal blades not falcate .... 96. *P. arenicoloides.*
      - Spikelets not over 2 mm. long; vernal blades 4 to 6 cm. long, autumnal blades much crowded, falcate .... 91. *P. aciculare.*

91. Panicum aciculare Desv.

Panicum aciculare Desv.; Poir. in Lam. Encycl. Suppl. **4**: 274. 1816. "Cette plante croît dans les Indes orientales. (V. s. in herb. Desv.)" Poiret cites "*P. aciculare* Desv. Herb." The type is in the Paris Herbarium. It is from the Desvaux Herbarium and is labeled in Desvaux's handwriting "Panicum aciculare Desv. in Enc. Suppl. 4. p. 274. habitat in india orientali." It is the autumnal form and is evidently the specimen described. The locality is certainly an error, as no such plant is known from the East Indies, and the specimen is without doubt from the southeastern United States.[a]

Panicum setaceum Muhl. Descr. Gram. 99. 1817. "Habitat in Georgia." The type, in the Muhlenberg Herbarium, is in a folio marked: "151 Panicum pungens M. 97 Elliott, 358." *Panicum pungens* in the herbarium stands in the same relation to the other species as does *P. setaceum* in Muhlenberg's book.[b] In the herbarium folio 151 is the first of the Panicums. In the book *P. setaceum* is the first species described under this genus. Likewise the sequence in the two places is essentially the same. The specimen, which is the autumnal form, agrees with Muhlenberg's description of *P. setaceum.*

Panicum subuniflorum Bosc; Spreng. Syst. Veg. **1**: 312. 1825. "*Carolin.*" In the Delessert Herbarium is a specimen from "Carolina" collected by Bosc. In the Willdenow Herbarium is another fragmentary specimen labeled *P. subuniflorum* Bosc, but without locality or collector. The latter may be the type.

Panicum arenicolum[*cola*] Ashe, Journ. Elisha Mitchell Soc. **15**: 56. 1898. "Type material collected by the writer at Chapel Hill, N. C. June 1898." The type could not be found in Ashe's herbarium. In Hitchcock's herbarium is a specimen labeled "Panicum arenaecolum Ashe" collected in the vicinity of Chapel Hill, North Carolina, by W. W. Ashe, and sent by him to Professor Scribner. The date of collection is not given. This specimen, which is probably a duplicate type, consists of two vernal culms, somewhat appressed-pubescent below; the stiffly ascending blades are glabrous except the lowermost, which is sparsely pubescent beneath.

Panicum filiram[*e*]*um* Ashe, Journ. Elisha Mitchell Soc. **16**: 88. 1900. "Sandy woods, eastern North Carolina." Type material collected in New Hanover County,

---

[a] Several cases of erroneous localities occur in Desvaux's herbarium. See *Panicum illinonense* Desv. under *P. fasciculatum.*

[b] Compare U. S. Dept. Agr. Div. Agrost. Circ. **27**: 2. 1900.

N. C., in June 1899." The type, in Ashe's herbarium, consists of two single vernal plants, with slender, villous culms, sheaths less villous, blades nearly glabrous on one plant, sparsely long-pilose on the other, the panicles overmature.

Panicum pungens Muhl.; Scribn. & Merr. U. S. Dept. Agr. Div. Agrost. Circ. **27**: 2. 1900, not Poir. 1816. This is mentioned as a herbarium name of *P. setaceum* Muhl., of which it is a typonym.

This is the species described in Britton's Manual[a] and in Small's Flora[b] under the name *Panicum neuranthum* Griseb.

DESCRIPTION.

Vernal culms numerous in a tuft, ascending from a spreading base, appressed-pubescent below, glabrate above, 20 to 50 cm. or, in shaded situations, 60 cm. or more high, the nodes more or less pubescent but not bearded; lower sheaths villous, the upper glabrous except the ciliate margin; blades stiff, spreading or ascending, narrowed to an involute point, glabrous or the lower sparsely pilose, somewhat papillose-hispid on the margin at base, the middle culm blades 4 to 6 cm. long, rarely longer, 2 to 5 mm. wide, the uppermost shorter, usually only 1 to 2 cm. long and 1 to 2 mm. wide; panicles open, 3 to 7 cm. long, the flexuous branches spreading at maturity; spikelets 1.9 to 2 mm. long, 1.1 mm. wide, obovate, blunt, basal attenuation short; first glume about one-fourth the length of the spikelet, obtuse or pointed; second glume and sterile lemma equal, papillose-pubescent; fruit 1.6 mm. long, 1 mm. wide, oval-elliptic, glabrous at the apex.

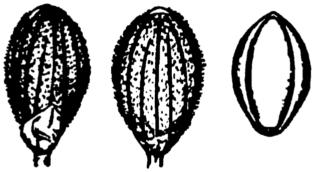


Fig. 156.—*P. aciculare*. From type specimen in Florence Herbarium.

Autumnal form consisting of numerous bushy-branched culms 10 to 30 cm. long, spreading and forming dense cushions, the short blades involute, sharp-pointed and usually arcuate, mostly 1 to 3 cm. long; spikelets more turgid than in the vernal form.

This species is abundant in the coast region and can be distinguished from all the other species of this group within its range by the small spikelets, and the awl-like blades of the autumnal state.

Chase's no. 3097½ is referred here though it is unusually glabrous.

DISTRIBUTION.

Sandy pine woods of the Coastal Plain from New Jersey to northern Florida and eastern Texas.

NEW JERSEY: Cape May, *Stone* in 1909.

VIRGINIA: Vicinity of Cape Henry, *Chase* 2357, 2936, 3682, 5413, 5414, *Hitchcock* 345, 347, *Kearney* 1375, 1566, 2038, *Mackenzie* 1664, *Williams* 3099.

NORTH CAROLINA: Lake Mattamuskeet, *Chase* 3205; Raleigh, *Chase* 3084; Wilmington, *Ashe* in 1899, *Chase* 3123, 3130, 3157, 4578, 4586, *Hitchcock* 344, 1447, 1473, *Kearney* 247, 284 in part; Roanoke Island, *Ashe* in Curtiss Dist. 6451, *Chase* 3215, 3216, 3217; Ocracoke Island, *Kearney* 2272; Edenton, *Kearney* 1871; Wilsons Mills, *Chase* 3094, 3097½, 3103, 3105; Jacksonville, *Chase* 3167; Wards Mill, *Chase* 3185.

SOUTH CAROLINA: Orangeburg, *Hitchcock* 17, 346, 1375, 1404; Aiken, *Ravenel* in 1882; Fripps Island, *Cuthbert* 1166; Isle of Palms, *Chase* 4525.

GEORGIA: Augusta, *Kearney* 215; Thomson, *Bartlett* 1444, 1455; Albany, *Tracy* 3640; Thomasville, *Tracy* 3638, 3641; Jessup, *Biltmore Herb*. 11866.

---

[a] Man. 84. 1901.

[b] Fl. Southeast. U. S. 95. 1903.

FLORIDA: Baldwin, *Hitchcock* 989; Lake City, *Combs* 183; Madison, *Combs* 216; Monticello, *Combs* 301, 329; Tallahassee, *Combs* 372, 380; Quincy, *Combs* 408; Washington County, *Combs* 554, 567a; Leon County, *Curtiss* E; Chattahoochee, *Tracy* 3639; Marianna, *Tracy* 3637; Milton, *Chase* 4302; Eustis, *Nash* 1243; Pasco County, *Curtiss* 6639.

ALABAMA: Tuskegee, *Carver* 96; Gateswood, *Tracy* 8420; Mobile, *Kearney* 21 in part.

MISSISSIPPI: Starkville, *Chase* 4444; vicinity of Biloxi, *Chase* 4359, *Hitchcock* 1082, *Kearney* 284½, 306 in part, *Tracy* 1417, 3634.

LOUISIANA: Covington, *Langlois* 48b in 1884; Calcasieu, *Cocks* 2194; Lake Charles, *Hitchcock* 1127, 1139½, 1140, *Tracy* 3650.

TEXAS: Waller County, *Hitchcock* 1225, *Thurow* 1 in 1900.

OKLAHOMA: Sapulpa, *Bush* 1388 in 1895 (Mo. Bot. Gard. Herb.).

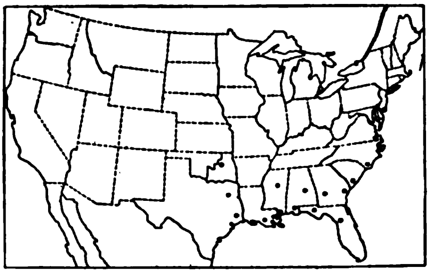


FIG. 157.—Distribution of *P. aciculare*.

92. Panicum chrysopsidifolium Nash.

Panicum chrysopsidifolium Nash in Small, Fl. Southeast. U. S. 100. 1903. On page 1327, in the list of new genera and species, the following citation is given: "Type, *Curtiss*, N. Am. Pl., no. D, in Herb. N Y. B. G." The type, in the herbarium of the New York Botanical Garden, is labeled "Hammock land, Leon Co. Fla., May 12, 1886," and consists of a clump of four vernal culms 30 to 55 cm. high with mature, short-exserted panicles.

DESCRIPTION.

Vernal form with ascending or spreading, rather slender culms, 30 to 45 cm. high, purplish, grayish-villous, especially below, the nodes bearded; sheaths much shorter than the internodes, villous like the culm, densely so at the summit; blades 5 to 10 cm. long, 3 to 5 mm. wide, tapering from base to apex, conspicuously pointed, villous on both surfaces; panicles finally long-exserted, 4 to 6 cm. long, about three-fourths as wide, the flexuous branches ascending or spreading; spikelets 2 mm. long, 1.2 to 1.3 mm. wide, obovate, blunt and turgid; first glume one-third the length of the spikelet, subacute or obtuse; second glume and sterile lemma subequal, scarcely covering the fruit at maturity, villous, the bullate papillæ prominent; fruit 1.7 mm. long, 1.2 mm. wide, broadly elliptic, minutely puberulent at the apex.

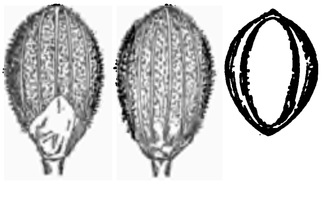


FIG. 158.—*P. chrysopsidifolium*. From type specimen.

Autumnal form spreading and forming mats, the culms slender, often zigzag toward the tip; blades numerous, flat, becoming papery with age, mostly 1 to 3 cm. long, 1.5 mm. wide; spikelets more turgid than usual in the primary panicle.

Panicum chrysopsidifolium has been confused with *P. neuranthum* Griseb., because both species were distributed by Wright under the same number (*Wright* 3453). This number in the Grisebach Herbarium is the type of *P. neuranthum*. The same number in several other herbaria consists of the autumnal form of *P. chrysopsidifolium*.[a]

---

[a] For further discussion of Wright's Cuba grasses, see Hitchcock, Contr. Nat. Herb. **12: 183. 1909.**

The specimen referred to by Grisebach,[a] under *P. neuranthum* as, "forma ascendens, ramosa, foliis planis, spiculis ut in α" is *P. chrysopsidifolium*.

This species can be distinguished from *P. consanguineum* by the smaller spikelets, and from *P. aciculare* by the bearded nodes and by the lax culms and flat blades of the autumnal form.

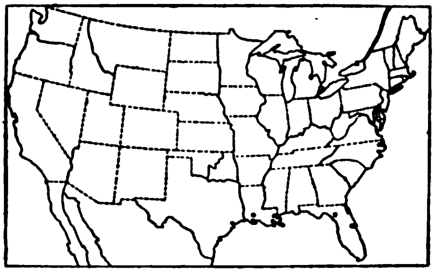


FIG. 159.—Distribution of *P. chrysopsidifolium*.

DISTRIBUTION.

Sandy pine woods of the Coastal Plain, Florida to Louisiana; also in Cuba and Porto Rico.

FLORIDA: Leon County, *Curtiss* D; Orange County, *Baker* 45; Sanford, *Hitchcock* 775.

LOUISIANA: Lake Charles, *Chase* 4405.

CUBA: Consolacion del Sur, *Palmer & Riley* 481; Herradura, *Hitchcock* 116; eastern Cuba, *Wright* 3453 in part; Isle of Pines, *Palmer & Riley* 982.

PORTO RICO: Santurce, *Heller* 982; Las Marias ad Tabomeo, *Sintenis* 5985.

93. **Panicum consanguineum** Kunth.

Panicum villosum Ell. Bot. S. C. & Ga. 1: 124. 1816, not Lam. 1791. No locality is cited. The type, in the Elliott Herbarium, consists of a single culm lacking the base, bearing four leaves and an immature, scarcely exserted panicle. The accompanying label reads: "Panicum villosum mihi. Hab. in umbrosis. Flor. Ap. Ma."

Panicum consanguineum Kunth, Rév. Gram. 1: 36. 1829. Based on *P. villosum* Ell., the name presumably changed because of *P. villosum* Lam.

Panicum commutatum consanguineum Beal, Grasses N. Amer. 2: 141. 1896. Based on *P. consanguineum* Kunth.

Panicum georgianum Ashe, Journ. Elisha Mitchell Soc. 15: 36. 1898. "Georgia: Small; Darden [Darien] Junction, McIntosh Co., June 27, 1895." The type specimen, which is in the Biltmore Herbarium and which is marked "P. georgianum W. W. Ashe," in Ashe's writing, is the autumnal form.

Panicum cahoonianum Ashe, Journ. Elisha Mitchell Soc. 15:[b] 113. 1899. Based on *P. georgianum* Ashe, the name changed because of *Panicum georgicum* Spreng. 1825.

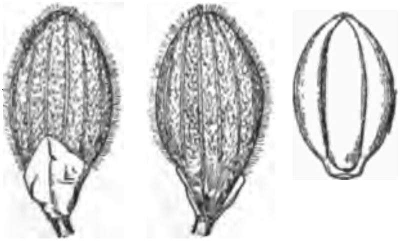


FIG. 160.—*P. consanguineum*. From type specimen of *P. villosum* Ell.

DESCRIPTION.

Vernal form with culms ascending or spreading, often geniculate at base, 20 to 55 cm. high, rather stout, densely felty-villous below, less so above, nodes bearded; sheaths villous, the upper often sparsely so; blades erect or ascending, 7 to 11 cm. long, 5 to 8 mm. wide, (the lowermost shorter and broader), tapering slightly toward the base, more or less involute-pointed, villous on both surfaces or nearly glabrous above, the longitudinal wrinkling conspicuous in the lower blades; panicles 4 to 8 cm. long, one-half to two-thirds as wide, the lower branches usually narrowly ascending; spikelets 2.6 to 2.8 mm. long, 1.6 to 1.8 mm. wide, obovate, blunt, turgid; first glume one-third the length of the spikelet or less; second glume and sterile lemma equal, scarcely covering the fruit at maturity, densely papillose-villous, the bullate papillæ prominent; fruit 2 mm. long, 1.5 to 1.7 mm. wide, minutely puberulent at the apex.

---

[a] Cat. Pl. Cub. 232. 1866.

[b] The title page, vol. 15, pt. 2. (pp. 76–114) is incorrectly numbered 14. (XIV).

Autumnal form spreading or decumbent, the numerous branches somewhat flabellately fascicled, the blades mostly 3 to 4 cm. long, 2 to 3 mm. wide, flat, thin, and papery.

The vernal form of this species may be distinguished from *P. angustifolium* by the greater amount of pubescence, the bearded nodes, and the ascending panicle-branches, and the autumnal form by the widely spreading habit and shorter blades.

DISTRIBUTION.

Sandy pine woods of the Coastal Plain from North Carolina to northern Florida and west to eastern Texas.

VIRGINIA: Virginia Beach, *Hitchcock* in 1905.

NORTH CAROLINA: Wilmington, *Hitchcock* 1449, 1471; Wards Mill, Onslow County, *Chase* 3174; Wilsons Mills, *Chase* 3095; Roanoke Island, *Chase* 3230.

SOUTH CAROLINA: Orangeburg, *Hitchcock* 1373, 1382.

GEORGIA: Macon, *Small* in 1895; Darien Junction, *Small* in 1895.

FLORIDA: Baldwin, *Hitchcock* 986, 999; Washington County, *Combs* 570, 651; Marianna, *Tracy* 3633; Milton, *Chase* 4299; without locality, *Rugel* 142.

ALABAMA: Gateswood, *Tracy* 8427.

MISSISSIPPI: Vicinity of Biloxi, *Chase* 4351, *Hitchcock* 1069, 1070, 1083, *Kearney* 218 in part, 284 in part, *Tracy* 1884, 2873, 3661, 4614.

ARKANSAS: Texarkana, *Heller* 4238.

LOUISIANA: Lake Charles, *Hitchcock* 1139, 1155, *Langlois* in 1884.

TEXAS: Beaumont, *Reverchon* 4156; Waller County, *Thurow* 23 in 1906.

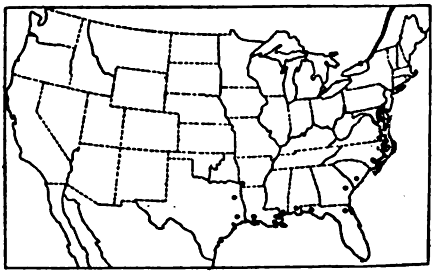


FIG. 161.—Distribution of *P. consanguineum*.

94. Panicum angustifolium Ell.

? Panicum ramulosum Michx. Fl. Bor. Amer. 1: 50. 1803. "Hab. in sylvis Carolinae." The type specimen, in the Michaux Herbarium, labeled "in pratis caespitosis Carolinae," belongs to a species of the Angustifolia, apparently *P. angustifolium*, but on account of the fragmentary condition of the type, which is devoid of spikelets, and the insufficiency of Michaux's description the identity of this specimen can not be determined with certainty.

Panicum angustifolium Ell. Bot. S. C. & Ga. 1: 129. 1816. No locality is cited. The type, in the Elliott Herbarium, consists of a single culm, lacking the base, bearing three leaves and a scarcely exserted, immature panicle; the culm is glabrous, the sheaths are sparingly pilose, densely ciliate on the margin toward the summit; blades 18 cm. long, involute toward the apex, long ciliate on the margin for half to two-thirds their length, otherwise glabrous. The accompanying label reads: "Panicum angustifolium. Hab: in aridis. Flor. Ma.?"

Panicum curtisii Steud. Syn. Pl. Glum. 1: 66. 1854. "*M. A. Curtis* sub: P. nervosum. *Mühlbrg.* var. legit in Carolina." The type in the Paris Herbarium, labeled by Steudel "Panicum curtisii Steud. Panicum nervosum Muhlb. var.? M. A. Curtis. Carolina australis, Commun. Lenormand," is a somewhat fragmentary specimen, but appears to be *P. angustifolium*.

DESCRIPTION.

Vernal form with erect or nearly erect culms 30 to 55 cm. high, the lowermost internodes gray crisp villous, the middle and upper glabrous; nodes glabrous or the lower villous, not bearded; lower sheaths more or less appressed-villous, the upper glabrous, except the usually ciliate margin; blades 8 to 12, rarely 15, cm. long, 4 to 8 mm. wide (lowermost blades shorter and broader and longitudinally wrinkled), stiffly ascending, the upper more appressed, long-acuminate, scarcely narrowed at base; panicles long-exserted, 4 to 10 cm. long, nearly as wide, loosely flowered, the branches at anthesis widely spreading, the lower 3 to 4 cm. long, often reflexed; spikelets 2.5 to 2.8 mm. long, 1.4 to 1.6 mm. wide, elliptic-obovate, turgid; first glume about one-third the length of the spikelet, pointed or obtuse; second glume and sterile lemma equal, covering the fruit at maturity, not beaked beyond it, papillose-villous; fruit 2 mm. long, 1.3 to 1.5 mm. wide, broadly elliptic, minutely puberulent at the obscurely umbonate apex.

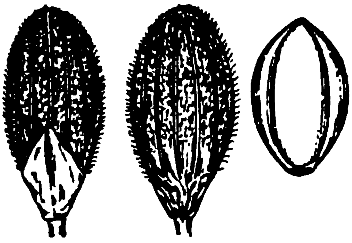


FIG. 162.—*P. angustifolium.* From type specimen.

Autumnal culms stiffly ascending or somewhat topheavy-reclining, not spreading nor mat-like; blades very numerous, flat, appressed, rather thin and papery, panicles reduced (the later ones often to two or three spikelets), overtopped by the leaves; spikelets commonly more turgid and blunt than those of the primary panicles.

The flat, papery blades of the autumnal form as seen in the spring still attached to the plants bearing the vernal culm are very characteristic of this species and of the two others of this group with flat autumnal blades (*P. consanguineum* and *P. chrysopsidifolium*).

DISTRIBUTION.

Sandy pine woods along the Coastal Plain from Pennsylvania to northern Florida and westward to eastern Texas.

PENNSYLVANIA: "Bank of Schuylkill below Reading, 1849, Thos. C. Porter" (Acad. Phil. Herb.).

DELAWARE: Frankford, *Commons* in 1875.

VIRGINIA: Vicinity of Cape Henry, *Chase* 5415, *Hitchcock* 348, *Kearney* 1369, 1416, *Williams* 3100; Dismal Swamp, *Chase* 3677.

NORTH CAROLINA: Roanoke Island, *Chase* 3249, 3250; vicinity of Wilmington, *Chase* 3138, 3163, 4585, *Hitchcock* 1466½, 1475; Onslow County, *Chase* 3169; Chapel Hill, *Chase* 3063; Raleigh, *Chase* 3082; Caraleigh Junction, *Chase* 3087.

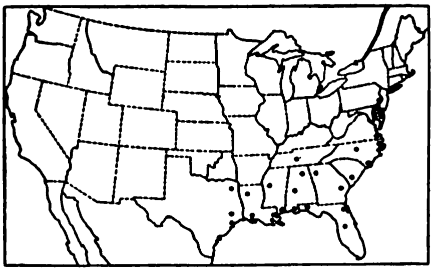


FIG. 163.—Distribution of *P. angustifolium.*

SOUTH CAROLINA: Fripps Island, *Cuthbert* 1165; Orangeburg, *Hitchcock* 349, 1408; Aiken, *Ravenel* in 1882.

GEORGIA: Augusta, *Kearney* 206; Albany, *Tracy* 3635 in part; Lookout Mountain, *Ruth* 56; Stone Mountain, *Hitchcock* 1362; Bullock County, *Harper* 828; Thomson, *Bartlett* 1462.

FLORIDA: Jacksonville, *Curtiss* 3587 in part, 6803; Baldwin, *Hitchcock* 984; Tallahassee, *Combs* 374, 376; Apalachicola, *Biltmore Herb.* 4278; Chattahoochee, *Tracy* 3636; Gainesville, *Chase* 4229, 4267; Milton, *Chase* 4297, 4301; Lakeland, *Hitchcock* 835.

TENNESSEE: Knoxville, *Scribner* in 1892 (Univ. Tenn. Herb.).

ALABAMA: Etowah County, *Eggert* 10; Pisgah, *Chase* 4479; Auburn, *Hitchcock* 1332, 1340, *Tracy* 3746, 3750, 3758 in part; Tuskegee, *Carver* 86; Flomaton, *Hitchcock* 1039; Mobile, *Kearney* 28 in part, *Langlois* 48.

MISSISSIPPI: Jackson, *Hitchcock* 1298; vicinity of Biloxi, *Hitchcock* 1087, 1091, 1105, 1115, *Kearney* 306 in part, *Tracy* 1730, 1883, 1888, 4578, 4579, 4615, 4616 in part.

LOUISIANA: Calhoun, *Hitchcock* 1261, 1264, 1269; Coushatta, *Ball* 121; Lake Charles, *Hitchcock* 1151, *Tracy* 3651, 3657; Calcasieu River, *Langlois* in 1884.

TEXAS: Waller, *Hitchcock* 1193, 1209, 1221; Beaumont, *Reverchon* 4159; Houston, *Bebb* 1262, *Hall* 833; Big Sandy, *Reverchon* 4193; without locality, *Wright* (Gray Herb.).

95. **Panicum fusiforme** Hitchc.

Panicum neuranthum ramosum Griseb. Cat. Pl. Cub. 232. 1866, not *P. ramosum* L. 1767. "Cuba occ. (Wr[ight] 3454)." The type, in the Grisebach Herbarium, was collected by Charles Wright in western Cuba in 1863, and is numbered "900 = 3454." It is the autumnal form. This species was also distributed by Wright under nos. 3453 and 3461 in part.[a]

Panicum fusiforme Hitchc. Contr. Nat. Herb. **12**: 222. 1909. Based on *P. neuranthum ramosum* Griseb., not *P. ramosum* L.

DESCRIPTION.

Vernal form similar to that of *P. angustifolium*; culms 30 to 70 cm. high, the basal and lower blades narrower and at least the lowermost softly pubescent beneath, the longitudinal wrinkles obscure, the leaves more or less clustered toward the base of the culms, the panicles thus long-exserted; spikelets 3.3 to 3.5 mm. long, 1.4 to 1.5 mm. wide, elliptic, long-attenuate at base; first glume two-fifths the length of the spikelet, usually obtuse, second glume and sterile lemma exceeding the fruit and somewhat beaked beyond it at maturity, the pubescence as in *P. angustifolium;* fruit 2.5 mm. long, 1.4 to 1.5 mm. wide, broadly elliptic, obscurely puberulent at the subacute apex.

Autumnal culms erect or reclining, under favorable conditions forming dense, bushy clusters 30 to 60 cm. in height; blades soon involute, 3 to 5 cm. long; spikelets more turgid than those of the primary panicles, 3.5 to 3.8 mm. long, more pointed; fruit more turgid.

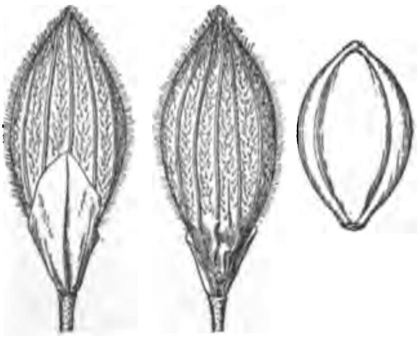


FIG. 164.—*P. fusiforme.* From type specimen of *P. neuranthum ramosum* Griseb.

Panicum fusiforme can be distinguished from *P. angustifolium* in the vernal state by the larger and more pointed spikelets and the soft pubescence on the lower surface of the narrower lower blades; in the autumnal state by the involute blades and distinctly longer spikelets. In the autumnal state this species resembles *P. arenicoloides*, but has larger spikelets.

---

[a] See Hitchcock, Contr. Nat. Herb. **12**: 222. 1909.

DISTRIBUTION.

Sandy pine woods, southern Georgia to Florida and Mississippi; also in Cuba.

Georgia: Albany, *Tracy* 3614, 3635 in part.

Florida: Lake City, *Combs* 136; De Funiak Springs, *Combs* 456; Monticello, *Combs* 298; Madison, *Combs* 231; Pensacola, *Combs* 516; Gainesville, *Chase* 4248, *Combs* 731; Sanford, *Hitchcock* 786, 791; Titusville, *Chase* 3991, 4021; Eustis, *Nash* 1226, 1856; Orange Bend, *Chase* 4105; Lake Harris, *Chase* 4119; Orange County, *Combs* 1037; Ormond, *Hitchcock* 114; Lafayette County, *Combs* 853, 899; Lakeland, *Hitchcock* 834, 837, 850; Wiwauma, *Hitchcock* 980; Tampa, *Combs* 1340, 1343; Seminole, *Tracy* 7163; Bartow, *Combs* 1241; Braidentown, *Hitchcock* 964; Manatee County, *Tracy* 6708, 6710 in part, 6713 in part, 6713a; Perico Island, *Tracy* 7371; Myers, *Chase* 4179, 4194, *Hitchcock* 877, 899, 912, 923; Miami, *Chase* 3855, *Hitchcock* 627.

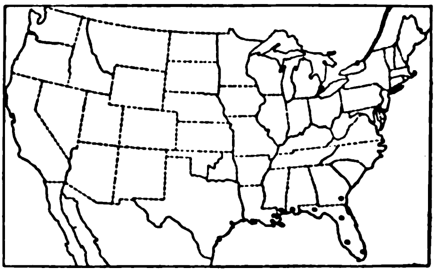


Fig. 165.—Distribution of *P. fusiforme*.

Alabama: Flomaton, *Hitchcock* 1054.

Mississippi: Ocean Springs, *Tracy* in 1892.

Cuba: Herradura, *Caldwell & Baker* 7139, *Hitchcock* 117, *Tracy* 9074; western Cuba, *Wright* 3453 in part, 3454 in part; Isle of Pines, *Curtiss* 406.

96. Panicum arenicoloides Ashe.

Panicum arenicoloides Ashe, Journ. Elisha Mitchell Soc. **16**: 89. 1900. "Shady sandy woods along the coast of North Carolina. Type material collected by me near Wilmington, N. C., June 6, 1899." The type, in Ashe's herbarium, consists of three vernal culms with involute blades and mature panicles; the spikelets are 2.4 mm. long.

Panicum orthophyllum Ashe, Journ. Elisha Mitchell Soc. **16**: 90. 1900. "Shady slopes of sand hills, New Hanover County, N. C., June, 1899." The type, in Ashe's herbarium, consists of a small tuft of vernal culms beginning to branch, about 60 cm. high, the lower nodes geniculate. The primary panicles are mostly devoid of spikelets, the secondary nearly mature; the spikelets are 2.2 mm. long.

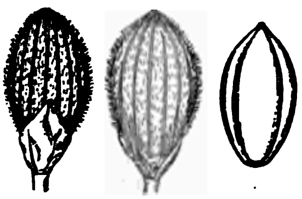


Fig. 166.—*P. arenicoloides*. From type specimen.

DESCRIPTION.

Vernal form intermediate in appearance between that of *P. angustifolium* and *P. aciculare*, grayish green, slender, mostly 30 to 50 cm. high; lower sheaths and blades softly villous; blades 7 to 12 cm. long (the lower shorter), 3 to 4, rarely 5 mm. wide, tapering from the base to a more or less involute apex; panicles 4 to 6 cm. long, two-thirds to three-fourths as wide, the lower branches ascending; spikelets 2.1 to 2.5 mm. long, 1.2 to 1.3 mm. wide, obovate, obtuse; first glume one-third the length of the spikelet, truncate or pointed; second glume and sterile lemma scarcely covering the fruit at maturity, papillose-pubescent; fruit 1.8 to 1.9 mm. long, 1.1 to 1.2 wide, obscurely puberulent at the apex.

Autumnal form bushy-branching, erect or topheavy, the blades involute; spikelets more turgid, the attenuate base in exceptional specimens elongated, lengthening the spikelet to as much as 2.8 mm.

The vernal form of this species can be distinguished from *P. aciculare* by the larger spikelets and longer blades, from *P. angustifolium* by the smaller spikelets and the ascending branches of the panicle; the autumnal form is distinguished by the involute blades, longer than those of *P. aciculare*.

The following specimens have spikelets with lengthened bases: Florida: Eustis, *Nash* 598, 1436; Lake City, *Chase* 4281; Gainesville, *Chase* 4211. Mississippi: Biloxi, *Tracy* 3632. An exceptional specimen, with beaked spikelets 2.9 mm. long, *Chase* 4161, Myers, Florida, is doubtfully referred here.

DISTRIBUTION.

Sandy pine woods, mostly near the coast, from North Carolina to Florida, Arkansas, and Texas; also in Guatemala.

North Carolina: Near Wilmington, *Chase* 3120, 3143, 3156, 4581, *Hitchcock* 350; Raleigh, *Chase* 3082½.

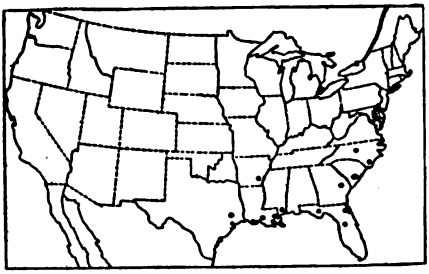


Fig. 167.—Distribution of *P. arenicoloides*.

South Carolina: St. Helena Island, *Cuthbert* in 1899; Orangeburg, *Hitchcock* 352; Isle of Palms, *Hitchcock* 351.

Georgia: Millen, *Harper* 757.

Florida: Duval County, *Curtiss* 3583* in part, 3587* in part, 4028; Lake City, *Chase* 4291, *Combs* 164, *Hitchcock* 1012; Monticello, *Combs* 300; Leon County, *Curtiss* B; Citrus County, *Combs* 1022; Mary Esther, *Tracy* 9144; Gainesville, *Chase* 4249; Ormond, *Hitchcock* 108.

Mississippi: Biloxi, *Chase* 4340, *Hitchcock* 1077, *Kearney* 215 in part.

Arkansas: Fulton, *Bush* 2522.

Louisiana: Breton Island, *Tracy* 459, 459a; Lake Charles, *Chase* 4423; Tangipohoa, *Cocks* 3322.

Texas: Houston, *Eggert* in 1899 (Mo. Bot. Gard. Herb.).

Guatemala: Between Gualán and Copán, *Pittier* 1805b.

97. **Panicum ovinum** Scribn. & Smith.

P. redivivum Trin.; Steud. Nom. Bot. ed. 2. **2**: 262. 1841. This is a nomen nudum, and appears as *P. redivivum* "*Trin.* mpt. Mexico." The type, in the Berlin Herbarium, was collected by Schiede at Hacienda de la Laguna, Mexico.

Panicum ovinum Scribn. & Smith, U. S. Dept. Agr. Div. Agrost. Circ. **16**: 3. 1899. "Type collected by F. W. Thurow, Waller County, Texas, May 25, 1898." The type specimen, in the National Herbarium, the vernal form, is glabrous except the ciliate basal portion of some of the lowermost blades.

DESCRIPTION.

Vernal form with culms usually few in a cluster, erect or nearly so, glabrous, 30 to 50 cm. high; sheaths glabrous or the lowermost appressed pubescent; blades erect or ascending, stiff, glabrous, the lower somewhat ciliate on the margin at base, the lowermost ovate or lanceolate, as much as 1 cm. wide, those of the mid-culm, 10 to 15 cm. long, 3 to 6 mm. wide, the uppermost shorter and narrower; panicles usually short-exserted, 5 to 9 cm. long, three-fourths as wide or less, loosely flowered, the lower branches ascending; spikelets 2.1 to 2.2 mm. long, 1.2 to 1.3 mm. wide, obovate-elliptic, obtuse, basal attenuation short; first glume about one-fourth the length of the spikelet, usually truncate; second glume and sterile lemma scarcely equaling the fruit at maturity, papillose-pubescent, sometimes minutely so; fruit 1.8 mm. long, 1.1 mm. wide, oval, puberulent at the apex.

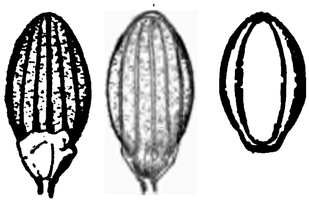


FIG. 168.—*P. ovinum.* From type specimen.

Autumnal form erect or nearly so, the blades becoming loosely involute, not much shorter than the vernal blades; spikelets more turgid, sometimes slightly shorter than those of the primary panicle.

Panicum ovinum in its vernal form differs from *P. aciculare* in being nearly smooth, and in having broader spikelets and larger, less exserted panicles, the uppermost blades being proportionately longer.

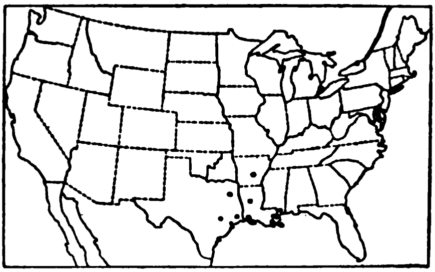


FIG. 169.—Distribution of *P. ovinum.*

DISTRIBUTION.

Dry or moist open ground, Mississippi to Arkansas and eastern Texas; also in Mexico. In Texas this species occurs upon the open prairie, on dry ground, and also in swales.

MISSISSIPPI: Ocean Springs, *Tracy* 4616 in part; Biloxi, *Hitchcock* 1077½.
ARKANSAS: Jefferson County, *Eggert* in 1898 (Mo. Bot. Gard. Herb.).
LOUISIANA: Shreveport, *Hitchcock* 1250; Lake Charles, *Hitchcock* 1131, 1141, 1150.
TEXAS: Dallas, *Reverchon* 1087; Waller County, *Hitchcock* 1172, 1192, 1210, 1222, *Thurow* in 1898 and 1906; Montgomery County, *Thurow* in 1905; Grand Saline, *Reverchon* 4137; Hempstead, *Hall* 834 (Gray Herb.); without locality, *Nealley* in 1884 and 1887, *Reverchon* 92 in 1879.
MEXICO: Hacienda de la Laguna, near Jalapa, *Schiede* (Berlin Herb.).

98. **Panicum neuranthum** Griseb.

Panicum neuranthum Griseb. Cat. Pl. Cub. 232. 1866. "Cuba or. (Wr[ight] 3453); occ., in savanis pr. Hanabana (Wr[ight] a. 1865: forma ascendens, ramosa, foliis planis, spiculis ut in α)." The type specimen, in the Grisebach Herbarium, was collected by Charles Wright in eastern Cuba in 1860 and is numbered "103=3453." This is the autumnal form. Another specimen, the second one cited above, was collected in 1865 and is labeled "α forma ascendens ramosa." This specimen is *P. chrysopsidifolium.* [a]

DESCRIPTION.

Vernal form with numerous cespitose, stiff, erect, glabrous culms, 30 to 60 cm. high; sheaths glabrous or ciliate on the margin and usually with a few long hairs at the summit, or the lowermost sparsely ascending-pubescent; blades erect or ascending, glabrous or with a few ciliæ toward the base, the short basal blades few or wanting, those of the middle culm usually 10 to 15 cm. (sometimes only 5 to 6 cm.) long, 3 to 5 mm. wide; panicles finally long-exserted, 5 to 9 cm. long, narrow, the flexuous branches narrowly ascending, rarely loosely spreading, the branchlets appressed, the short-pediceled spikelets more or less secund along the branches; spikelets 2 mm. long, 1.2 mm. wide, broadly obovate, blunt, the attenuation at base short; first glume about one-third the length of the spikelet, truncate or pointed; second glume and sterile lemma scarcely equaling the fruit at maturity, finely papillose-pubescent; fruit 1.8 mm. long, 1.1 mm. wide, elliptic, puberulent at the subacute apex.

---

[a] See Hitchcock, Contr. Nat. Herb. **12**: 183. 1909, for a discussion of Wright's Cuba grasses.

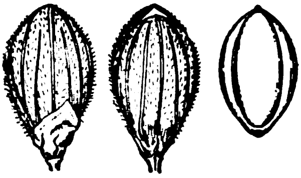


Fig. 170.—*P. neuranthum*. From type specimen.

Autumnal form with erect, usually slender culms nearly as tall as the vernal form; blades involute but not stiff, not conspicuously shorter than the vernal blades, 4 to 10 cm. long; spikelets more turgid, the fruit often slightly exceeding the second glume.

Most nearly related to *P. ovinum*, from which the vernal form may be distinguished by the narrower, fewer-flowered panicles with subsecund, slightly smaller spikelets, by the usually taller culms, and by the absence of the comparatively broad basal blades which distinguish the latter; the autumnal form is much taller, with longer, less crowded blades. From *P. aciculare* this is distinguished by absence of pubescence, much longer blades, subsecund spikelets, and an erect autumnal form.

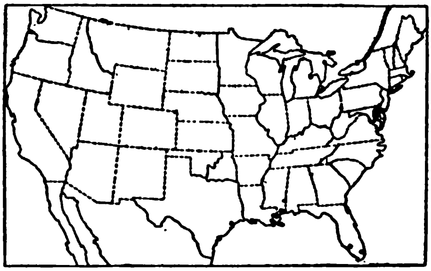


Fig. 171.—Distribution of *P. neuranthum*.

DISTRIBUTION.

Savannas and open ground, southern Florida, and along the coast to Mississippi; also in the Bahamas and Cuba.

Florida: Miami, *Hitchcock*, 109, 705, 710; Alligator Harbor, *Tracy* 7176; Sanibel Island, *Simpson* 298; Clearwater, *Tracy* 7166; Braidentown, *Tracy* 6711; without locality, *Rugel* 290.

Mississippi: Petit Bois Island, *Tracy* 4567; Horn Island, *Tracy* 2859.

Bahamas: New Providence, *Britton & Brace* 599 (Field Mus. Herb.).

Cuba: Eastern Cuba, *Wright* 3453 in part.

Bicknelliana.—Culms few to several in a tuft, glabrous or nearly so; sheaths glabrous or with a few hairs; ligules nearly obsolete; blades somewhat elongated, stiffly ascending or spreading, ciliate at base; panicles few-flowered, with 7-nerved, long-peduncled spikelets 2.5 to 3 mm. long. Autumnal form sparingly branching from the upper or middle nodes.

This group of two species is intermediate in habit between the Depauperata and Dichotoma; the blades are elongated as in the former but the vernal culms and the mode of branching are more like those of the latter.

Spikelets 2.5 to 2.8 mm. long, blades not over 9 mm. wide.... 99. *P. bicknellii.*
Spikelets 3 mm. long, blades as much as 12 mm. wide........100. *P. calliphyllum.*

99. Panicum bicknellii Nash.

Panicum bicknellii Nash, Bull. Torrey Club **24**: 193. 1897. "The type specimens were collected by Mr. Eugene P. Bicknell * * * in Bronx Park [N. Y.] on July 21, 1895." The type, in Nash's herbarium, is the early branching form of the plant. The spikelets are sparsely pubescent.

Panicum nemopanthum Ashe, Journ. Elisha Mitchell Soc. **15**: 42. 1898. "Type material collected by the writer April, 1895, in the Penitentiary woods, Raleigh, N. C." The type could not be found in Ashe's herbarium, but a specimen from the type material labeled in Ashe's handwriting is in the National Herbarium. This is a single vernal culm with an immature, partly included panicle; the spikelets are nearly or quite glabrous.

Panicum bushii Nash, Bull. Torrey Club **26**: 568. 1899. "Collected by B. F. Bush, in dry ground, in McDonald Co., Missouri, July 24, 1893 no. 413." The type in the Columbia University Herbarium consists of a small tuft of branching culms, the primary panicles devoid of spikelets; most of the primary nodes sparsely pilose, most of the secondary ones glabrous; the spikelets glabrous.

Although the types of *P. nemopanthum* and of *P. bushii* have glabrous spikelets, later collections of the species in the Penitentiary woods, Raleigh (*Ashe & Chase* 3092) and from B. F. Bush have pubescent spikelets. These two types are exceptional specimens.

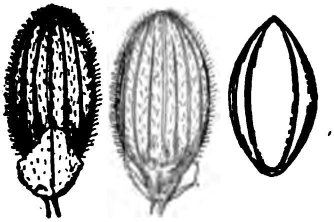


FIG. 172.—*P. bicknellii.* From type specimen.

DESCRIPTION.

Vernal form bluish green; culms erect or ascending, 30 to 50 cm. high, glabrous, or the lowermost portion puberulent, nodes sparsely bearded or glabrous; sheaths glabrous or the lower sparsely villous especially above the nodes; blades stiffly ascending, or somewhat spreading, elongated, 8 to 15 cm. long, 3 to 8 mm. wide, the uppermost usually longest, narrowed toward the base, there usually ciliate with a few stiff hairs; panicles ovoid, 5 to 8 cm. long, about two-thirds as wide, the branches ascending, bearing few long-pediceled spikelets, these 2.3 to 2.8 mm. long, 1.1 to 1.2 mm. wide, oblong-elliptic, sparsely pubescent or rarely glabrous; first glume about one-third the length of the spikelet, subacute; second glume and sterile lemma equal, covering the fruit at maturity; fruit 2 mm. long, 1.1 mm. wide, elliptic, subacute.

Autumnal form erect, branching from the middle nodes, forming a loose, bushy crown of stiffly ascending blades not much reduced and overtopping the narrow, few-flowered panicles.

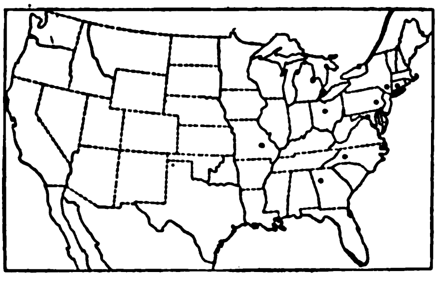


FIG. 173.—Distribution of *P. bicknellii.*

The long upper blades in this species are noticeable. Vernal specimens sometimes resemble *P. werneri*.

One specimen, *Bush* 3246, has pilose sheaths and scattered long hairs on the blades.

DISTRIBUTION.

Dry, sterile or rocky woods, Connecticut to Georgia and Missouri.

CONNECTICUT: Norwich, *Graves* 15 in 1899.

NEW YORK: Bronx Park, *Bicknell* in 1895; Cedarhurst, *Bicknell* in 1903; Rockville Center, *Bicknell* in 1906; Woodmere, *Bicknell* in 1904; Rockport, *Bicknell* 1905.

Pennsylvania: Chambersburg, *Porter* in 1896, 1897, and 1898; Westchester, *Windle* in 1904.
Ohio: Vinton, *Kellerman* 6887.
Missouri: McDonald County, *Bush* 413; Eagle Rock, *Bush* 3246.
Maryland: Plummers Island, *Hitchcock* 118, *Steele* in 1897; Great Falls, *Chase* 3783; West Chevy Chase, *Chase* 2477½, 5416.
District of Columbia: *Hitchcock* 353.
North Carolina: Raleigh, *Ashe* in 1895, *Ashe & Chase* 3092.
Georgia: Stone Mountain, *Hitchcock* 201.

100. Panicum calliphyllum Ashe.

Panicum calliphyllum Ashe, Journ. Elisha Mitchell Soc. **15**: 31. 1898. "Type material collected by the writer at Watkins, Lake Seneca, N. Y., Aug. 1898." The type could not be found in Ashe's herbarium. In the National Herbarium is a specimen collected by Ashe "Near Ithaca, N. Y.," which Mr. Ashe has stated orally is from the published locality and is a duplicate type. This specimen consists of two vernal culms, lacking basal leaves.

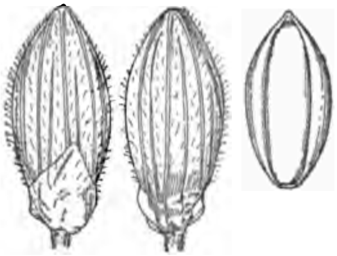


Fig. 174.—*P. calliphyllum*. From type specimen.

DESCRIPTION.

Vernal form yellowish green; culms erect, 35 to 50 cm. high, glabrous, the nodes sparsely villous; sheaths glabrous, or the lowermost sparingly pubescent, ciliate on the margin; blades ascending, flat, 8 to 12 cm. long, 9 to 12 mm. wide, glabrous, ciliate at the rounded base; panicles few-flowered, 7 to 9 cm. long, half as wide or less, with a few ascending branches; spikelets mostly long-pediceled, 2.9 to 3 mm. long, 1.2 mm. wide, elliptic, sparsely pubescent; first glume about one-third the length of the spikelet; second glume and sterile lemma equaling the fruit at maturity; fruit 2.3 mm. long, 1.1 mm. wide, elliptic, subacute.

Autumnal form sparingly branching from the middle nodes, the branches about as long as the internodes, erect; blades not greatly reduced; panicles narrow, partly included.

This little known species has been referred[a] to *P. xanthophysum*, to small specimens of which the above-mentioned duplicate type bears some superficial resemblance. The species is closely related to *P. bicknellii*. But three specimens have been seen, on none of which is the habitat given.

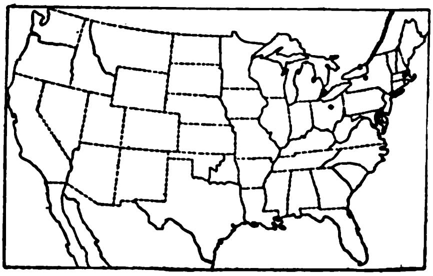


Fig. 175.—Distribution of *P. calliphyllum*.

DISTRIBUTION.

Massachusetts, New York, and Ohio.

Massachusetts: Medford, *Perkins* in 1881 (N. E. Bot. Club Herb.).
New York: Near Ithaca, *Ashe* in 1898.
Ohio: Painesville, *Hacker* in 1901.

---

[a] Merrill, Bull. Torrey Club **27**: 595. 1900.

Nudicaulia.—The following species does not seem to be closely allied with any other, and hence is placed tentatively in a group by itself. So far as the technical characters are concerned it might be placed in the group Dichotoma, but it differs from any of the species of that group in the narrow, enveloping base of the blades, and the nearly naked culms. When the autumnal form is known the affinity of the species may be shown.

101. Panicum nudicaule Vasey.

Panicum nudicaule Vasey, U.S. Dept. Agr. Div. Bot. Bull. **8**: 31. 1889. "Swamps, Santa Rosa County, Fla. (A. H. Curtiss.)" The type, in the National Herbarium, is the vernal form. It was collected in "Swamps, Santa Rosa County, N. W. Florida," in May [1886] by A. H. Curtiss (no. 3583*).

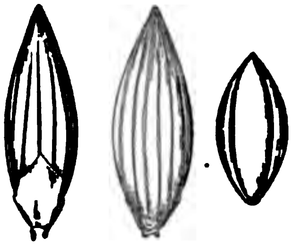


FIG. 176.—*P. nudicaule*. From type specimen.

DESCRIPTION.

Vernal culms erect from a somewhat spreading base, 40 to 60 cm. high, glabrous, the lower internodes short, the two upper much elongated, thus producing the effect of a long, nearly leafless stem; nodes glabrous, only the upper two visible; sheaths glabrous or the overlapping basal ones sometimes sparsely pubescent; ligules ciliate, less than 0.5 mm. long; blades erect, rather thick, 4 to 10 cm. or some of the lower as much as 13 cm. long, 5 to 8 mm. wide (the uppermost more or less reduced), nearly linear, abruptly pointed, slightly narrowed and somewhat enveloping the culm at base, glabrous; panicles long-exserted, 4 to 7 cm. long, hardly as wide, few-flowered, the branches ascending; spikelets 2.7 to 2.9 mm. long, 1 to 1.2 mm. wide, narrowly ovate, acuminate, glabrous; first glume one-fourth to one-third as long as the spikelet, usually pointed; second glume and sterile lemma 7-nerved, exceeding the fruit and pointed beyond it; fruit 2 mm. long, 1 mm. wide, elliptic, acute.

Autumnal form unknown.

DISTRIBUTION.

Swamps, western Florida and southern Alabama.

FLORIDA: Blackwater River Swamp, Santa Rosa County, *Curtiss*, B, 3583*.

ALABAMA: Gateswood, *Tracy* 8431, 8432.

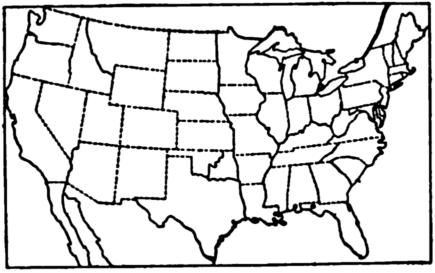


FIG. 177.—Distribution of *P. nudicaule*.

Dichotoma.—Culms few to many in a tuft, glabrous, or the nodes only pubescent; sheaths glabrous, or the lower sometimes pubescent, never conspicuously hirsute; ligules ciliate, 0.7 mm. long or less; blades lanceolate, rarely as much as 1 cm. wide, mostly glabrous; panicles usually open; spikelets elliptical, not turgid (except in *P. roanokense* and *P. caerulescens*), 1.5 to 2.5 mm. long; second glume and sterile lemma 5 to 7-nerved. Autumnal form usually freely branching, erect, reclining, or prostrate, secondary leaves and panicles much reduced.

Nodes, at least the lower, bearded.
Spikelets 1.5 to 1.6 mm. long, glabrous (occasional individuals with pubescent spikelets)................102. *P. microcarpon.*
Spikelets 2 mm. or more long.
Spikelets glabrous, 2 mm. long; autumnal form topheavy-reclining..............................110. *P. barbulatum.*
Spikelets pubescent.
Blades all velvety; autumnal form sparingly branched.................................105. *P. annulum.*
Blades glabrous, or only the lower pubescent or velvety; autumnal form freely branching.
Spikelets 2 mm. long; autumnal form profusely branching.
Fruits slightly exposed at maturity; upper sheaths viscid-spotted; autumnal form erect or reclining..103. *P. nitidum.*
Fruits covered at maturity; sheaths not viscid-spotted; autumnal form decumbent, with flabellate-fascicled branches; Mexican.....104. *P. multirameum.*
Spikelets 2.2 mm. or more long; autumnal form less profusely branching.
Sheaths and upper nodes glabrous......107. *P. clutei.*
Lower sheaths and all nodes pubescent..106. *P. mattamuskeetense.*

Nodes not bearded.
Spikelets pubescent.
Culms erect, never becoming vine-like.
Primary blades spreading; panicles purplish; fruit exposed at summit..................107. *P. clutei.*
Primary blades erect; panicles green; fruit covered (wood forms with spreading blades may be distinguished from *P. dichotomum* by pubescent spikelets, 2.2 mm. long)....108. *P. boreale.*
Culms soon prostrate, vine-like; branches divaricate.
Plants bright green, culms lax; spikelets not over 2.1 mm. long.........................114. *P. lucidum.*
Plants grayish green, culms stiff; spikelets 2.5 mm. long................................115. *P. sphagnicola.*
Spikelets glabrous.
Culms soon prostrate.
Plants bright green, culms lax; spikelets not over 2.1 mm. long.........................114. *P. lucidum.*
Plants grayish green, culms stiff; spikelets 2.5 mm. long................................115. *P. sphagnicola.*
Culms erect, or the autumnal form topheavy, never prostrate.
Spikelets not over 1.6 mm. long; panicles narrow; plants glaucous bluish green.........113. *P. caerulescens.*
Spikelets 2 mm. or more long; panicles open.
Blades erect, firm; spikelets turgid, strongly nerved; plants grayish olive green....112. *P. roanokense.*
Blades spreading; spikelets not turgid.

Spikelets 2.2 mm. or more long, pointed; sheaths bearing pale glandular spots .... 111. *P. yadkinense.*
Spikelets not over 2 mm. long, not pointed.
  Autumnal form erect, branched like a little tree; primary blades rarely over 5 mm. wide; second glume shorter than fruit and sterile lemma ...... 109. *P. dichotomum.*
  Autumnal form topheavy-reclining; primary blades 6 to 10 mm. wide; second glume equaling fruit and sterile lemma ...... 110. *P. barbulatum.*

102. Panicum microcarpon Muhl.

Panicum microcarpon Muhl.; Ell. Bot. S. C. & Ga. 1: 127. 1816. No locality is cited. The type, in the Elliott Herbarium, consists of a single culm, lacking the base, with five leaves and an immature panicle, slightly included at the base. The accompanying label reads: "Panicum microcarpon. barbulat: var.? Hab. Georg: Dr. Baldwin." As shown by his description and the above-mentioned type, Elliott misunderstood Muhlenberg's application of this name and attached it to a different species, though giving Muhlenberg as author. Muhlenberg's later publication of the name [a] for a different species [b] is thus invalidated.

Panicum nitidum ramulosum Torr. Fl. North. & Mid. U. S. 146. 1824. "Near Quaker-Bridge, New-Jersey." The type, in the Torrey Herbarium, is a sparingly branched, vernal culm, with nearly mature terminal panicle. The label reads: "Panicum nitidum β var. [β is ramulosum] collected in swamps in the pine barrens of New Jersey, near Quaker Bridge, June, 1818."

?*Panicum nitidum barbatum* Torr. Fl. North. & Mid. U. S. 146. 1824. "In woods and meadows." The type could not be found in the Torrey Herbarium. The description seems to apply to the vernal form of *P. microcarpon*, or possibly to *P. barbulatum*.

This species is the one described by Muhlenberg [c] under the name of *P. discolor* Spreng., as shown by a specimen so labeled in the Muhlenberg Herbarium. *Panicum heterophyllum* Schreb. is here cited as a synonym, erroneously, as Schreber did not publish this name. *P. heterophyllum* Muhl.[d] is a nomen nudum.

Panicum microcarpon Muhl. is the species described as *P. barbulatum* by American authors, which proves to be not *P. barbulatum* Michx.

DESCRIPTION.

Vernal form cespitose; culms erect, or sometimes geniculate at base, 30 or usually 60 to 100 cm. high, the nodes densely bearded with reflexed hairs; sheaths glabrous, or the lowermost pubescent, often mottled with white spots between the nerves, ciliate on the margin; blades thin, spreading, the upper often reflexed, 10 to 12 cm. long, 8 to 15 mm. wide, narrowed toward the base, glabrous, more or less papillose-ciliate at base; panicles finally long-exserted, many-flowered, ovate in outline, 8 to 12 cm. long, the branches ascending; spikelets 1.6 mm. long, 0.7 mm. wide, elliptic, glabrous, or rarely minutely pubescent; first glume one-fourth the length of the spikelet or less; second glume a little shorter than the sterile lemma and slightly exposing the fruit at maturity; fruit 1.3 to 1.4 mm. long, 0.7 mm. wide, elliptic, slightly pointed.

---

[a] Descr. Gram. 111. 1817.

[b] See *P. microcarpon* Muhl. under *P. polyanthes*, page 255.

[c] Descr. Gram. 114. 1817.

[d] Trans. Amer. Phil. Soc. 3:160. 1793.

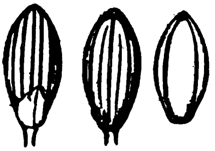


Fig. 178.—*P. microcarpon.* From type specimen in Elliott Herbarium.

Autumnal form much branched from all the nodes, reclining from the weight of the dense mass of branches; blades reduced, flat, mostly 2 to 4 cm. long; the ciliæ of the sheaths and the hairs at the base of the blades relatively more conspicuous; panicles much reduced and loosely flowered; the tufted basal blades often large, sometimes as much as 8 cm. long and 15 mm. wide.

The following specimens have pubescent spikelets, but differ in no other respect from the typical form: Massachusetts: *Bartlett* 844; Connecticut: *Bissell* 5570; New Jersey: *Heritage* 4; Pennsylvania: *Smith* 102; Illinois: *Schneck* in 1880; Delaware: *Canby* 15; District of Columbia: *Pollard* 408, *Vasey* in 1884; North Carolina: *Biltmore Herb.* 803a, *Chase* 3204; Georgia: *Ruth* 57; Florida: *Curtiss*, P. Q.; Alabama: *Carver* 40, *Hitchcock* 1343; Mississippi: *Tracy* 1733, 3388,[a] 3623; Arkansas: *Heller* 4237. The last specimen is also exceptional in being pubescent throughout.

Curtiss's no. 6648, McClenny, Florida, with glabrous spikelets as much as 1.8 mm. long, seems to be intermediate between *P. microcarpon* and *P. nitidum*.

DISTRIBUTION.

Wet woods and swampy places, Massachusetts to Illinois, and south to northern Florida and eastern Texas.

Massachusetts: Milton, *Bartlett* 844.

Connecticut: New Haven, *Bissell* 5566; Groton, *Bissell* 5569; Stratford, *Bissell* 5571; Milford, *Bissell* 5570.

Rhode Island: Providence, *Collins* in 1891 (Gray Herb.).

New York: Eastern New York, *Austin* (Mo. Bot. Gard. Herb.).

New Jersey: South Amboy, *Mackenzie* 1484, 2161; Morris Plains, *Mackenzie* 1605; Haworth, *Mackenzie* 2476; Wildwood, *Chase* 3516, *Heritage* 4, 4′; Clifton, *Nash* in 1892.

Pennsylvania: Lancaster County, *Heller* 4770 in part, 4787, *Small* in 1889; Philadelphia, *Smith* 102.

Ohio: Albion, *Ashcroft* in 1897; Jackson, *Kellerman* 6778.

Indiana: Brazil, *Somes* 232.

Illinois: Peoria, *Brendel*; Mount Carmel, *Schneck* in 1880.

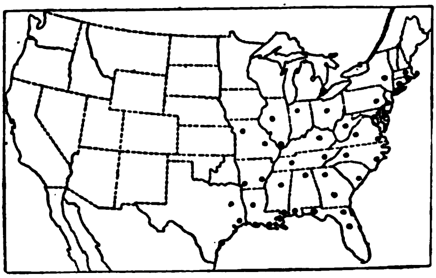


Fig. 179.—Distribution of *P. microcarpon.*

Missouri: Butler County, *Eggert* 236; Campbell, *Bush* 747 in part; Dunklin County, *Eggert* 287.

Delaware: Milton, *Commons* 346, 347; Centerville, *Commons* 285; Townsend, *Canby* 15.

Maryland: Chesapeake Beach, *Chase* 3253, 3262; *Hitchcock* 1606, 1611; Beltsville, *Chase* 3767, 3831; Riverdale, *Chase* 2367, 2370.

District of Columbia: *Ball* 704, *Chase* 5419, in Kneucker Gram. Exs. 550, *Hitchcock* 370, 596, *Merrill* 197, *Pollard* 362, 406, 408, *Vasey* in 1884.

---

[a] Tracy's no. 3388 was erroneously cited under *Panicum subbarbulatum* Scribn. & Merr. U. S. Dept. Agr. Div. Agrost. Circ. **29**: 9. 1901.

VIRGINIA: Vicinity of Norfolk, *Kearney* 1307, *Mackenzie* 1686, *Noyes* 93; Dismal Swamp, *Chase* 3668; Smyth County, *Small* in 1892.

WEST VIRGINIA: Baileysville, *Morris* 1193; Peeryville, *Morris* 1139.

NORTH CAROLINA: Hyde County, *Chase* 3204, 3210½; Onslow County, *Chase* 3187, 3190; Chapel Hill, *Chase* 3061½; Rowan County, *Small* in 1894; Biltmore, *Biltmore Herb.* 803a.

SOUTH CAROLINA: Orangeburg, *Hitchcock* 1393, 1411, 1419.

GEORGIA: Clarke County, *Harper* 74; Stone Mountain, *Eggert* 89; Thomson, *Bartlett* 1081, 1457; Whitfield County, *Harper* 281, *Wilson* 125, 137; Gwinnett County, *Small* in 1893; Lookout Mountain, *Ruth* 57, 64; Augusta, *Cuthbert* 1161; Warm Springs, *Tracy* 8865; Leslie, *Harper* 1105; Rabun County, *Small* in 1893.

FLORIDA: Tallahassee, *Combs* 391, *Kearney* 88, *Nash* 2522; Lake City, *Combs* 173; Madison, *Combs* 255, 256; Orange County, *Combs* 1140.

KENTUCKY: Harlan County, *Kearney* 50.

TENNESSEE: Polk County, *Kearney* 326 in part; Cocke County, *Kearney* 967; Carroll County, *Eggert* 78.

ALABAMA: Mobile, *Mohr* in 1892; Jackson County, *Chase* 4482; Tuskegee, *Carver* 16, 40; Cullman County, *Eggert* 15; Auburn, *Hitchcock* 1343.

MISSISSIPPI: Biloxi, *Tracy* 1733, 3623, 3624, 3761, 4609 in part, 7018; Wahalak, *Tracy* 3224; Coopolis, *Tracy* 4595; Fairport, *Tracy* 3207; Centerville, *Tracy* 3618; Macon, *Tracy* 3225; Saratoga, *Tracy* 8417; Starkville, *Phares* 3623; Morrisonville, *Tracy* 3388.

ARKANSAS: Little Rock, *Coville* in 1887; northwest Arkansas, *Harvey* 4, Texarkana, *Heller* 4237.

LOUISIANA: Plaquemines Parish, *Langlois* 40a, 40b; Lake Charles, *Chase* 4426, *Hitchcock* 1149; Calhoun, *Ball* 51.

TEXAS: Big Sandy, *Reverchon* 4194; Texarkana, *Heller* 4088; Rockland, *Nealley* 36; Waller County, *Thurow* 18.

103. Panicum nitidum Lam.

Panicum nitidum Lam. Tabl. Encycl. **1**: 172. 1791. "E Carolina. com. D. fraser." The type,[a] in the Lamarck Herbarium, consists of a panicle and the uppermost joint of the culm with its leaf, the blade reflexed, the node sparsely clothed with reflexed hairs. This specimen does not belong to any of the species to which the name *P. nitidum* has been applied by American authors.

Panicum nodiflorum Lam. Encycl. **4**: 744. 1798. Lamarck states as to the origin of his specimen, "J'en possède un exemplaire recueilli par M. Fraser dans la Caroline. Le citoyen Michaux l'a trouvée dans la Basse-Caroline." The type, in the Lamarck Herbarium, is a fragment of an autumnal culm with two nodes, at each of which is a fascicle of branchlets with reduced leaves but devoid of spikelets. It is from "Caroline."

Panicum dichotomum nitidum Wood, Class-book ed. 3. 786. 1861. This is presumably based on *P. nitidum* Lam., though no synonym nor locality is cited. The short description seems to apply best to *P. lindheimeri* Nash.

Panicum subbarbulatum Scribn. & Merr. U. S. Dept. Agr. Div. Agrost. Circ. **29**: 9. 1901. Based on "(*Panicum barbulatum* of Ell. Sk. Bot. S. C. and Ga. **1**: 127. 1817, not Michx. Fl. Bor. Am. **1**: 49. 1803.)" "The type of the species in the herbarium of Elliott" consists of three vernal culms lacking the base.

---

[a] For a full discussion see Hitchcock, Contr. Nat. Herb. **12**: 148. 1908.

DESCRIPTION.

Vernal form cespitose; culms erect or somewhat spreading at base, rather stout, usually 30 to 60 cm. high, or sometimes as much as 1 meter high, the nodes bearded with reflexed hairs; sheaths glabrous, or the lower pubescent, ciliate on the margin, more or less mottled or glandular, especially the upper at anthesis; blades firm, glabrous, sometimes sparsely ciliate at the base, 5 to 12 cm. long, 5 to 10 mm. wide, the lower ascending, the upper usually reflexed; panicles ovoid, 5 to 8 cm. long, nearly as wide, rather densely flowered, the axis and ascending branches viscid-spotted; spikelets elliptic, 2 mm. long, 1 mm. wide; first glume less than one-third the length of the spikelet, pointed; second glume and sterile lemma subequal, the slightly shorter glume scarcely covering the fruit at maturity; fruit elliptic 1.7 mm. long, 1 mm. wide, subobtuse.

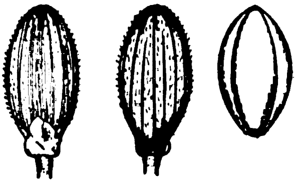


FIG. 180.—*P. nitidum.* From type specimen.

Autumnal form erect or more or less reclining from the weight of the foliage, the branchlets and foliage forming large clusters from the nodes of the vernal culm; reduced blades numerous, 1 to 3 cm. long, 1 to 3 mm. wide, flat or soon becoming involute; panicles mostly reduced to a few long-pediceled spikelets.

This species has been confused with *Panicum microcarpon*, from which it is distinguished by the pubescent spikelets, 2 mm. long, and by the erect autumnal form with involute blades. The viscid spots on the sheaths are often conspicuous.

Two specimens, *Hitchcock* 1420 and 1421, while showing all the other characters of this species have glabrous spikelets, but they are fully 2 mm. long.

DISTRIBUTION.

Low moist or marshy ground from Virginia to Florida and along the coast to Texas; also in the Bahamas.

MISSOURI: Carter County, *Eggert* 288.

VIRGINIA: Virginia Beach, *Hitchcock* 119.

NORTH CAROLINA: Scranton, *Chase* 3200.

SOUTH CAROLINA: Orangeburg, *Hitchcock* 4, 15, 1376, 1389, 1392, 1420, 1421, 1422, 1423.

GEORGIA: Thomson, *Bartlett* 1173, 1456.

FLORIDA: Milton, *Chase* 4307, 4321; Madison County, *Combs* 266; Citrus County, *Combs* 979, 1008; Lake County, *Chase* 4091, *Hitchcock* 814, *Nash* 376; Sanford, *Chase* 4132, *Hitchcock* 774; Titusville, *Chase* 3990, 4005, 4017; Myers, *Hitchcock* 898, 908, Lee Co. Pl. 478, 479; Miami, *Hitchcock* 718, *Tracy* 8850; Homestead, *Hitchcock* 687; Captiva Island, *Tracy* 7199; Sumter County, *Curtiss* 3600A in part[a]; Duval County, *Curtiss* 3600A in part; Sanibel Island, *Tracy* 7170; Braidentown, *Hitchcock* 961.

MISSISSIPPI: Biloxi, *Hitchcock* 1081, *Tracy* 2031, 4591, 4609 in part; Macon, *Tracy* 3228.

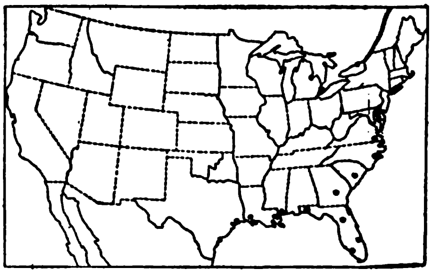


FIG. 181.—Distribution of *P. nitidum*.

---

[a] The specimen of this number in the Gray Herbarium consists of *P. nitidum* and *P. equilaterale*.

LOUISIANA: Lake Charles, *Hitchcock* 1128, 1143, 1148, 1153, 1154.
TEXAS: Hempstead, *Hall* 834 in part.
BAHAMAS: Great Bahama, *Britton & Millspaugh* 2518, 2736, *Brace* 3697 (all in Field Mus. Herb.).

104. Panicum multirameum Scribn.

Panicum multirameum Scribn. U. S. Dept. Agr. Div. Agrost. Circ. **19**: 2. 1900. "Gravelly hills near Jalapa, State of Vera Cruz, altitude 1,250 m. (4000 feet). *C. G. Pringle* 7882, 1889. Orizaba, State of Vera Cruz, February 17, *Jared G. Smith*, No. 593, 1892." The type, *Pringle* 7882, in Hitchcock's herbarium, is the autumnal form with decumbent culms and numerous ascending branches, with a few vernal culms still attached.

DESCRIPTION.

Vernal culms erect or soon decumbent, 30 to 60 cm. high, nodes villous-bearded; sheaths strongly ciliate on the margin, especially at the summit, the upper glabrous, the lowermost more or less villous; blades rather thick, 3 to 6 cm. long, 3 to 6 mm. wide, glabrous, or rarely puberulent, somewhat ciliate around the base, obscurely white-margined; panicles ovoid, 3 to 6 cm. long, about three-fourths as wide, the branches ascending; spikelets 2 mm. long, 1 mm. wide, elliptic, finely pubescent; first glume one-third the length of the spikelet; second glume and sterile lemma equal and just covering the fruit at maturity; fruit 1.7 mm. long, 0.9 mm. wide, rather abruptly subacute.

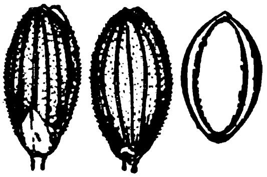


FIG. 182.—*P. multirameum*. From type specimen.

Autumnal form decumbent, rooting at the lower nodes, flabellately branching before the maturity of the primary panicle, the branchlets in close, appressed clusters at the ends of the secondary branches; blades reduced, flat or somewhat rolled, appressed; panicles reduced to a few spreading branches or long-pediceled spikelets.

None of the specimens examined shows a basal rosette of leaves. In technical characters this species is allied to *P. nitidum* but differs in the decumbent, flabellately-branched autumnal form.

DISTRIBUTION.

Dry hills and gravelly banks, southern Mexico.

MEXICO: Jalapa, *Pringle* 7882, 8339,[a] 9209, 9210; Orizaba, *J. G. Smith* 593, *Bourgeau* 2383 in part (all in Hitchcock's herbarium except *Pringle* 8339); *Botteri* 703 in part (Gray Herb.).
GUATEMALA: Coban, *Tuerckheim* 56 in part (Gray Herb.).

105. Panicum annulum Ashe.

Panicum annulum Ashe, Journ. Elisha Mitchell Soc. **15**: 58. 1898. "Dry rocky woods. Maryland to North Carolina and Georgia. Near Washington, D. C. Ward 1892," is the first specimen cited, and is taken as the type. This is in the National Herbarium and consists of three vernal culms with mature panicles. The year of collection is 1882 instead of 1892.

Panicum bogueanum Ashe, Journ. Elisha Mitchell Soc. **16**: 85. 1900. Based on "*P. annulum* Ashe, not *P. annulatum* A. Rich." 1851.

---

[a] Three species were distributed under this number: National Herbarium no. 381990 is *P. multirameum; P. sphaerocarpon* is mixed with this species in the specimen of this number in Hitchcock's herbarium; National Herbarium no. 823271 is *P. olivaceum*.

DESCRIPTION.

Vernal form usually purplish, in small clumps or solitary; culms 35 to 60 cm. high, the nodes densely bearded; sheaths shorter than the internodes, velvety-pubescent or the upper nearly glabrous; blades 6 to 12 cm. long, 7 to 13 mm. wide, densely velvety-pubescent on both surfaces, the margin ciliate toward the base; panicles 6 to 8 cm. long, about three-fourths as wide, rather numerously flowered, the flexuous branches ascending or later spreading; spikelets 2 mm. long, 0.9 mm. wide, elliptic, blunt; first glume one-fourth to one-third the length of the spikelet, obtuse; second glume and sterile lemma pubescent, the glume slighty shorter; fruit 1.8 to 1.9 mm. long, 0.9 mm. wide, elliptic.

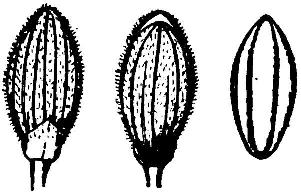


FIG. 183.—*P. annulum*. From type specimen.

Autumnal form erect, bearing in late summer a few short, erect branches at the upper nodes; soon dying to the ground.

DISTRIBUTION.

Dry woods, New Jersey to Georgia, and west to Mississippi; also in Missouri; rare.

NEW JERSEY: Milburn, *Mackenzie* 2138.
PENNSYLVANIA: Chester County, *Pennell* 999, *Windle* 7; Delaware County, *Pennell* 621, 642, 727, 1184.
MISSOURI: Hunter, *Eggert* in 1893 (Mo. Bot. Gard. Herb.).
MARYLAND: West Chevy Chase, *Chase* 2947, 3809, 5420.
DISTRICT OF COLUMBIA: Woodley Park, *Ward* in 1882.
VIRGINIA: Great Falls, *Chase* 3708.
NORTH CAROLINA: Chapel Hill, *Ashe* in 1898.
GEORGIA: Augusta, *Cuthbert* 431.
ALABAMA: Mobile, *Mohr* in 1897; Auburn, *Earle & Baker* 1544 (Ala. Polyt. Inst. Herb.).
MISSISSIPPI: Starkville, *Tracy* in 1888.

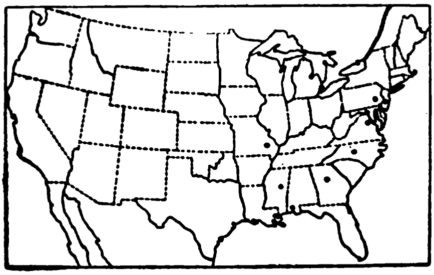


FIG. 184.—Distribution of *P. annulum*.

106. Panicum mattamuskeetense Ashe.

Panicum mattamuske[*e*]*tense* Ashe, Journ. Elisha Mitchell Soc. **15**: 45. 1898. "Roadsides, ditch banks, and wet open woods around Lake Mattamuskeet, N. C. * * * Collected by the writer, and Mr. Gilbert Pearson in June, 1898." The type could not be found in Ashe's herbarium. In the National Herbarium is a specimen labeled "Panicum Mattamusketense Ashe, Lake Mattamuskeet" in Ashe's handwriting, collected "June 10–July 6, 1898," by "W. W. Ashe," evidently a duplicate type. This is a single vernal culm nearly 80 cm. high, with a mature panicle, and agrees in all respects with the description except that the spikelets are described as glabrous, while those of the specimen are pubescent. The two lower sheaths and lowest blade are velvety pilose; the spikelets are 2.3 mm. long. A second duplicate type in Biltmore Herbarium is a better and more characteristic specimen.

Panicum flexuosum Muhl.; Scribn. & Merr. U. S. Dept. Agr. Div. Agrost. Circ. **27**: 3. 1900, not Retz. 1791. This herbarium name of Muhlenberg is listed and referred to *P. mattamuskeetense* Ashe. The species was described by Muhlenberg[a] immediately after *Panicum discolor* Spreng., under the heading, "Co-species vel varietas major." The type, in the Muhlenberg Herbarium, is somewhat fragmentary, consisting of a single culm broken into three pieces, but is evidently the same as *P. mattamuskeetense*.

DESCRIPTION.

Vernal form in clumps of few to several culms, olivaceous, usually strongly tinged with deep purple; culms stout, erect or subgeniculate at base, the nodes bearded or the upper puberulent only; sheaths less than half the length of the internodes, pilose on the margin, a puberulent ring at the summit, the auricles pilose, the lower sheaths velvety-pilose, the upper glabrous; ligule dense, 0.7 mm. long; blades horizontally spreading, 8 to 12 cm. long, 8 to 12 mm. wide (basal blades much shorter), acuminate, narrowed toward the base, the lower velvety, the upper glabrous, on both surfaces; panicles long-exserted at maturity, 8 to 10 mm., rarely 12 mm. long, about three-fourths as wide, many-flowered, the flexuous branches spreading, short spikelet-bearing branchlets in the axils; spikelets 2.3 to 2.5 mm. long (rarely 2.7 mm. long), 1.1 mm. wide, elliptic, pointed before maturity, pubescent; first glume about one-third the length of the spikelet, subacute; second glume and sterile lemma subequal, barely covering the fruit at maturity; fruit 2 mm. long, 1 mm. wide, elliptic.

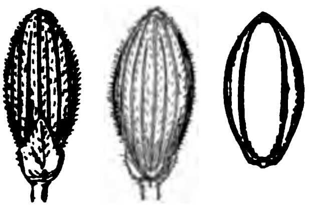


FIG. 185.—*P. mattamuskeetense*. From duplicate type specimen in National Herbarium.

Autumnal form erect or becoming somewhat decumbent, branching rather sparingly from the middle nodes after the maturity of the primary panicles, the branches rather appressed, the reduced crowded blades ascending.

The spikelets at maturity are more turgid, shorter, and more obtuse than when immature, the swelling of the ripened fruit shortening the spikelet in length. In *Chase* 3744 the spikelets are 2.7 mm. long, while in *Chase* 3791 from the same place three weeks later the mature spikelets are but 2.4 mm. long, and in *Chase* 3793, of the same date as the latter, they are but 2.1 mm. long; the fruits, however, are of the same size, 2 mm. long, the difference in length being due to a varying length of the second glume and sterile lemma.

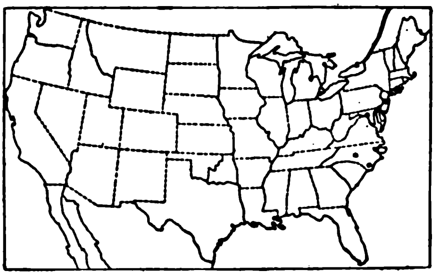


FIG. 186.—Distribution of *P. mattamuskeetense*.

DISTRIBUTION.

Low moist ground, New York to North Carolina.

- **New York**: Hempstead, *Bicknell* in 1903; Woodmere, *Bicknell* in 1902; Hewletts, *Bicknell* in 1905; Far Rockaway, *Bicknell* in 1902.
- **New Jersey**: Anglesea, *Brown* in 1897 (Phila. Acad. Herb.).
- **Maryland**: Beltsville, *Chase* 3744, 3744½, 3791, 3793, 3826, 3829; Vienna, *Novik* 182.
- **North Carolina**: Lake Mattamuskeet, *Ashe* in 1898; Wilsons Mills, *Chase* 3099; Wilmington, *Hitchcock* 354, 1455; Roanoke Island, *Chase* 3232.

---

[a] Descr. Gram. 115. 1817.

107. **Panicum clutei** Nash.

Panicum clutei Nash, Bull. Torrey Club **26**: 569. 1899. "Pine-barrens of southern New Jersey. Collected by Mr. W. N. Clute * * * on a trip from Tuckerton to Atsion, July 3-6, 1899." The type, in Nash's herbarium, consists of three stout culms with mature panicles. The lowermost nodes are sparsely bearded, the upper glabrous, the lowermost sheaths sparsely soft-pilose as in the type of *P. mattamuskeetense*. The blades are puberulent or pilose on the auricles and the dense ligule is 0.5 mm. long.

DESCRIPTION.

Vernal form similar in color, size, and habit to *P. mattamuskeetense*, but more nearly glabrous, only the lowermost nodes, sheaths, and blades velvety, the puberulent ring at the summit of the sheath less dense or wanting; panicles similar, on the average smaller; spikelets 2.2 to 2.3 mm. long, 1 mm. wide, indistinguishable from the smaller spikelets of *P. mattamuskeetense;* fruit the same size and shape.

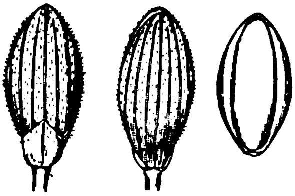


FIG. 187.—*P. clutei*. From type specimen.

Autumnal form stiffly erect, branching from the lower and middle nodes before the maturity of the primary panicles, the earlier branches nearly equaling the primary culms, the later branches shorter, somewhat crowded, the reduced blades spreading.

This form is but doubtfully distinguished from *P. mattamuskeetense*. The division is here made on the nearly glabrous character of *P. clutei*, and spikelets not over 2.3 mm. long, but a few of the specimens are about as referable to one species as to the other. One specimen, *Chase* 3590, has the smaller panicles and more numerous branches of *P. clutei*, but the two or three lower sheaths and blades are velvety, while *Chase* 3793 has spikelets but 2.1 mm. long and upper nodes puberulent only, but is densely velvety below. The latter specimen is referred to *P. mattamuskeetense* because its vernal form (*Chase* 3744½) is more like the type of *P. mattamuskeetense* than like that of *P. clutei*. One specimen, *Chase* 3242, has glabrous spikelets.

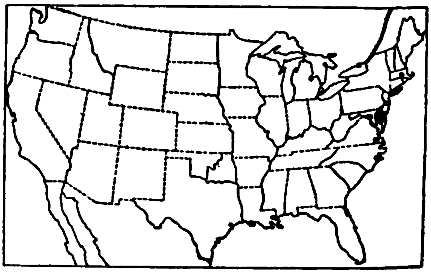


FIG. 188.—Distribution of *P. clutei*.

DISTRIBUTION.

Low moist ground and cranberry bogs, Massachusetts to North Carolina.

MASSACHUSETTS: Framingham, *Smith* 732; West Falmouth, *Churchill* in 1894 (Hitchcock Herb.).
NEW YORK: Riverhead, *Young* in 1874 (Field Mus. Herb.).
NEW JERSEY: Burlington County, *Clute* in 1899; Toms River, *Bicknell* in 1900; Manchester, *Chickering* in 1877; Atsion, *Chase* 3545, 3553; Forked River, *Chase* 3590; Tuckerton, *Chase* 3598.
DELAWARE: Ellendale, *Commons* 345.
DISTRICT OF COLUMBIA: Kenilworth Swamp, *Steele* in 1899.
VIRGINIA: Bedford County, *Curtiss* in 1871 (Gray Herb.).
NORTH CAROLINA: Roanoke Island, *Chase* 3242.

108. Panicum boreale Nash.

Panicum boreale Nash, Bull. Torrey Club **22**: 421. 1895. "Moist soil, Newfoundland and Ontario to New York, Vermont and Minnesota. This plant was first noted by the writer in 1893 in the Catskill Mts., near Cairo, N. Y." The type in Nash's herbarium consists of several vernal culms with nearly mature panicles; the lower sheaths sparsely papillose-pubescent at least toward the summit, the lower and middle nodes bear a few reflexed hairs. The label reads: "Panicum boreale Nash., n. sp. Moist soil, Cairo, Greene Co., N. Y. Alt. 1400 ft. Coll: Geo. V. Nash, June 28, 1893."

DESCRIPTION.

Vernal form cespitose, the culms erect, or in shaded places sometimes decumbent at base, usually 30 to 50 cm. high, the nodes glabrous or sometimes with a few hairs; sheaths often overlapping, ciliate on the margin, glabrous, or the lower sparsely pubescent; blades erect, or in laxer forms spreading, sparsely ciliate at the rounded base, otherwise glabrous, 6 to 12 cm. long, 7 to 12 mm. wide; panicles loosely rather few-flowered, 5 to 10 cm. long, hardly as wide, the branches ascending or spreading; spikelets 2 to 2.2 mm. long, 1 mm. wide, elliptic, subacute, pubescent; first glume one-third as long as the spikelet or less; second glume and sterile lemma subequal, the glume scarcely as long as the fruit at maturity; fruit 1.9 mm. long, 1 mm. wide, elliptic, subacute.

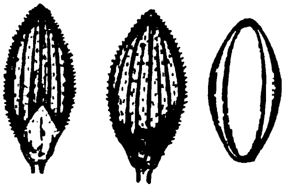


FIG. 189.—*P. boreale*. From type specimen.

Autumnal form erect, sparingly branched from all the nodes in late summer, the branches erect, the leaves and panicles not greatly reduced.

A weak form with geniculate base and lax spreading blades occurs in Maine, and is represented by *Fernald* 512 and 516, and *Chase* 3355. One specimen, *Chase* 3437, is unusual in having blades that are puberulent beneath. Two specimens from northern Indiana, *Bebb* 2030 and 2831, and a specimen from Wisconsin, *Cheney* 2100, have stouter culms and more compact and more numerously flowered panicles. A specimen from Detroit, Mich., *Farwell* 1425, is referred to this species doubtfully because of the pubescence on the back of the joint between the blade and the sheath and because of the sparse papillose-pubescence on the under surface of the blades and on some of the sheaths. It resembles *P. mattamuskeetense* in habit, but the nodes are glabrous and it is far out of the range of that species. A specimen from Rockville Center, Long Island, *Bicknell* in 1903, is doubtfully referred here.

DISTRIBUTION.

Moist open ground or woods, Newfoundland to New Jersey and west to northern Indiana and Minnesota.

NEWFOUNDLAND: Exploits River, *Robinson & Schrenk* 222.

NOVA SCOTIA: Windsor, *Macoun* 29349; without locality, *Burgess* 16.

NEW BRUNSWICK: Fredericton, *Fowler* in 1892; Miramichi, *Fowler* in 1892.

QUEBEC: Montmorenci Falls, *Macoun* 69204 (Gray Herb.).

MAINE: Dover, *Fernald* 239, 514; Orono, *Fernald* 513, 516, 517; Holden, *Knight* 60, 61; North Berwick, *Parlin* 1029, 1187; Brownsville, *Parlin* 1701, 1738, 1744; Canton, *Parlin* 2013, 2034; St. Francis, *Fernald* 505, *Knight* 58; Farmington, *Fernald* 512; Hartford, *Parlin* 1423; Cumberland, *Chamberlain* 336-793; Cape Elizabeth, *Chase* 3458; Chesterville, *Chase* 3277, 3355, 3437, 3443; Mount Desert Island, *Redfield* in 1893.

NEW HAMPSHIRE: Jaffrey, *Hitchcock* 120, *Robinson* 338, 338a; White Mountains, *Hitchcock* 121.

VERMONT: Brattleboro, *Jones* 33.

MASSACHUSETTS: Framingham, *Smith* 733; South Hadley, *Cook* in 1887.

CONNECTICUT: Southington, *Bissell* 5582; Griswold, *Graves* 77; Waterford, *Graves* 82.

NEW YORK: Cairo, *Nash* in 1893; Fulton Chain, *Peck* 2, 2a, 3.

ONTARIO: Almonte, *Fowler* in 1898; Algonquin Park, *Macoun* 22022.

NEW JERSEY: Budds Lake, *Mackenzie* 2093; Cranberry Lake, *Mackenzie* 2109.

OHIO: Wauseon, *Kellerman* in 1899 (Ohio State Univ.).

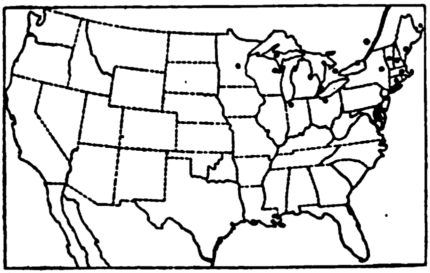


FIG. 190.—Distribution of *P. boreale.*

INDIANA: Gibson, *Bebb* 2935, *Hill* 97 in 1908; Griffith, *Hill* 50 in 1909.

MICHIGAN: Keweenaw County, *Farwell* 643; shore of Lake Superior, *Wood* in 1884.

WISCONSIN: Tomahawk, *Cheney* 2100; Newbold, *Cheney* 1700; Granite Heights, *Cheney* 3088.

MINNESOTA: Hennepin County, *Sandberg* in 1890 (Univ. Minn. Herb.).

109. Panicum dichotomum L.

Panicum dichotomum L. Sp. Pl. 58. 1753. "Habitat in Virginia." Since Linnæus gives no description of his own, but quotes the diagnosis from Gronovius's Flora Virginica,[a] the type of this species is *Clayton* no. 458 which is the specimen cited by Gronovius,[b] and upon which his diagnosis is based. This specimen, preserved in the Gronovius Herbarium, is the autumnal form answering well to Gronovius's characterization, "vix pedale, in arbusculae formam excrescens." The specimen in the Linnæan Herbarium[c] collected by Kalm is *P. microcarpon*.

Panicum angustifolium LeC. in Torr. Cat. Pl. N. Y. 91. 1819, not Ell. 1816. No specimen nor locality is cited. A vernal specimen in the Torrey Herbarium penciled "angustifolius (nitid. var)" but without data may be the type.

Panicum tremulum Spreng. Neu. Entd. **2**: 103. 1821. "Panicum n. 39. Mühlenb. gram. p. 127.* In Nova Caesarea." [The * indicates a new species.] No locality is cited by Muhlenberg, and this number does not now exist in the Muhlenberg Herbarium. In the Sprengel Herbarium is a specimen consisting of a vernal culm with mature panicle, which bears a label "Panicum tremulum Spr. Hb. Spr. Torrey." A second label reads "Panicum tremulum* Mühlenb. gram. p. 127." Though no locality is given this specimen is doubtless the basis of the locality cited by Sprengel, and may be considered his type, since he gives a description and had not seen Muhlenberg's plant.

Panicum dichotomum viride Vasey, U. S. Dept. Agr. Div. Bot. Bull. **8**: 30. 1889. No locality nor specimen is cited. The diagnosis reads "Smooth all over, leaves light green and narrower." In the National Herbarium are four specimens marked "var.

---

[a] Fl. Virg. **2**: 133. 1743.

[b] See Hitchcock, Contr. Nat. Herb. **12**: 127. 1908, for an account of the grasses of Gronovius's Flora Virginica.

[c] See Hitchcock, Contr. Nat. Herb. **12**:114. 1908, for an account of the American grasses in the Linnæan Herbarium.

viride Vasey" in Vasey's handwriting. Of these a vernal specimen collected by L. F. Ward, Woodley Park, Washington, D. C., 1881, is chosen as the type, since it is entirely without pubescence, while the other specimens marked "var. viride" by Vasey have pubescent spikelets or nodes, or are fragmentary.

Panicum dichotomum divaricatum Vasey, U. S. Dept. Agr. Div. Bot. Bull. **8**: 30. 1889. No specimen nor locality is cited. There are in the National Herbarium two specimens of the autumnal form of *P. dichotomum* marked "var. divaricatum" by Vasey. Of these, *S. M. Tracy* 127, Lake, Mississippi, is chosen as the type, since the other specimen is nearly devoid of spikelets. Certain other specimens marked by Vasey do not correspond to the description.

Panicum nitidum pauciflorum Britton, Trans. N. Y. Acad. **9**: 14. 1889. Based on "P. dichotomum var. pauciflorum Vasey in Columbia College Herbarium." The type is labeled "Panicum, Shady moist grounds, July" and consists of several sparingly branched culms of *P. dichotomum* with small panicles. Vasey's herbarium name had not been published.

Panicum nitidum viride Britton, Trans. N. Y. Acad. **9**: 14. 1889. Based on *P. dichotomum viride* Vasey.

Panicum dichotomum commune Wats. & Coulter in A. Gray, Man. ed. 6. 633. 1890. No specimen nor locality is cited. The name as published is "(*a*) *commune*" and was probably meant to designate the common vernal form. No specimen marked "var. commune" could be found in the Gray Herbarium.

Panicum ramulosum viride Porter, Bull. Torrey Club **20**: 194. 1893. Presumably based on *P. dichotomum viride* Vasey, since "(Vasey)" is given after the varietal name.

DESCRIPTION.

Vernal form often purplish; culms 30 to 50 cm. high, erect, from a knotted crown, the nodes naked or the lower with a few spreading hairs; sheaths less than half the length of the internodes, sometimes ciliate on the margin, otherwise glabrous, or the lowermost rarely sparingly pubescent; blades spreading, 5 to 11 cm. long, 4 to 8 mm. wide, acuminate, slightly narrowed toward the base, glabrous on both surfaces, sometimes with a few long hairs on the margin at the base, the basal blades lanceolate-ovate, long-ciliate on the margin near the base; panicles long-exserted, 4 to 9 cm. long, the axis and spreading branches flexuous, spikelet-bearing toward the ends; spikelets 2 mm. long, 0.9 mm. wide, elliptic, glabrous or rarely pubescent; first glume one-third the length of the spikelet, subacute; second glume and sterile lemma rather faintly nerved, the glume shorter than the fruit at maturity; fruit 1.8 mm. long, 0.9 mm. wide, elliptic.

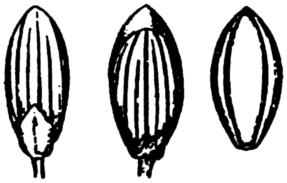


FIG. 191.—*P. dichotomum*. From type specimen in Gronovius Herbarium.

Autumnal culms much branched at the middle nodes, the lower portion usually erect and devoid of blades, thus giving the plants the appearance of diminutive trees as described by Gronovius and Linnæus; blades much reduced and very numerous, often involute.

This common and widely distributed species can be distinguished by its lack of pubescence, its smooth spikelets, 2 mm. long, and its erect autumnal form.

A few specimens, such as *Hitchcock* 1292, *Pollard* 323, and *Ward* in 1881, from Washington, D. C., which show all the other characters of *P. dichotomum* have pubescent spikelets.

DISTRIBUTION.

Dry or sterile woods, New Brunswick to Michigan and south to northern Florida and eastern Texas.

New Brunswick: Bass River, *Fowler.*

Maine: Mount Agamenticus, *Parlin* 1266, *Ricker* 1309.

New Hampshire: Walpole, *Fernald* 406.

Vermont: West Rutland, *Eggleston* 1759.

Massachusetts: Framingham, *Smith* 736.

Connecticut: Greens Farms, *Pollard* 16; Bridgeport, *Eames* in 1895; Oxford, *Harger* in Kneucker Gram. Exs. 245.

New York: Long Island, *Bicknell* in 1905; Oxford, *Coville* in 1884; Washington County, *Burnham* 13.

Ontario: Galt, *Herriot* 13.

New Jersey: Morris County, *Mackenzie* 1405, 2280; Cranberry Lake, *Mackenzie* 2106.

Pennsylvania: Easton, *Porter* in 1895, 1897, and 1898; Lancaster County, *Heller* 4769, 4783; York County, *Rose & Painter* 8134; Mountainville, *Pretz* 1936.

Ohio: Berlin Heights, *Moseley* in 1895; Lancaster, *Kellerman* 6768; Sugar Grove, *Kellerman* 6891.

Indiana: Dune Park, *Chase* 1919, *Umbach* 1789; Miller, *Chase* 1543; Lafayette, *Dorner* 83.

Illinois: Cobden, *Waite* in 1885.

Michigan: Port Huron, *Dodge* in 1899 and 1909; Grand Beach Springs, *Hill* 84 in 1908.

Missouri: St. Francois County, *Eggert* 246.

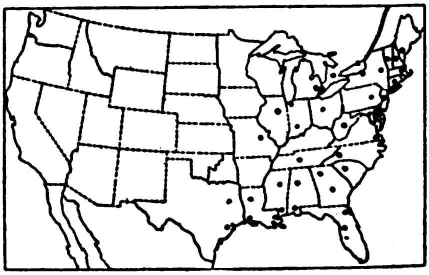


Fig. 192.—Distribution of *P. dichotomum.*

Delaware: Wilmington, *Commons* 297; Centerville, *Commons* 294, 295.

Maryland: Riverdale, *Chase* 2379, *House* 949; High Island, *Pollard* 324; Great Falls, *Chase* 2315.

District of Columbia: *Hitchcock* 122, 357, *Kearney* 5, 25, *Williams* 6, 8, 9.

Virginia: Four-Mile Run, *Hitchcock* 358, Norfolk County, *Kearney* 300 in part, 1374, *Noyes* 73, 75, 97; Dismal Swamp, *Chase* 3657.

West Virginia: Wyoming County, *Morris* 1193a; Fayette County, *Morse* in 1903.

North Carolina: Chimney Rock Mountain, *Biltmore Herb.* 800c; Biltmore, *Biltmore Herb.* 800a in part; Blowing Rock Mountain, *Small & Heller* 480; Chapel Hill, *Chase* 3048, 3056½.

South Carolina: Aiken, *Kearney* 234; Pickens County, *Anderson* 1201; Orangeburg, *Hitchcock* 1400, 1403; Graniteville, *Cuthbert* 962.

Georgia: Clark County, *Harper* 95; Albany, *Tracy* 3616, 3649; Rowe, *Canby* 219; Stone Mountain, *Eggert* 44½, 46, *Hitchcock* 1352; Pigeon Mountain, *Wilson* 179; Alcovey Mountain, *Small* in 1893.

Florida: Duval County, *Curtiss* 3600A in part, *Kearney* 147; Waldo, *Combs* 687 in part; Orange Bend, *Chase* 4100.

Tennessee: Knoxville, *Scribner* in 1890; Polk County, *Chambliss* 39, 77, *Kearney* 329.

Alabama: Auburn, *Tracy* 3757, *Hitchcock* 1330; Flomaton, *Tracy* 3625 in part; Cullman County, *Eggert* 20.

MISSISSIPPI: Starkville, *Tracy* 1755; Enterprise, *Tracy* 3273; Meridian, *Tracy* 3253; Fairport, *Tracy* 3204, 3209; Nicholson, *Kearney* 367, 384; Biloxi, *Tracy* 2028, 2050.

LOUISIANA: Calhoun, *Hitchcock* 1262, 1292; Shreveport, *Hitchcock* 1240, 1246, 1251; Calcasieu, *Langlois* 42 in 1884.

TEXAS: Hardin County, *Nealley* in 1892; Beaumont, *Reverchon* 4155, 4158.

110. Panicum barbulatum Michx.

Panicum barbulatum Michx. Fl. Bor. Amer. **1**: 49. 1803. "Hab. in Carolina." In the Michaux Herbarium[a] is a sheet upon which are three specimens and two labels. One label reads "Panicum *barbulatum* Hab. in Canada P. capillari affine. Ad ripas amnis: *Rivierre* a Jacques Cartier dicti legi," the other "Rivierre a Jacques Cartier Route a Queb. P. barbulatum." The two larger plants are the vernal form of the species described below, and do not belong to the species to which the name *P. barbulatum* has been heretofore applied in our Manuals.[b] The third plant upon this sheet is a small specimen of *P. lindheimeri* Nash. The only Carolina specimen from Michaux labeled *P. barbulatum* is one in the Drake de Castillo Herbarium sent out by Richard. This is labeled "Caroline," but since the specimen, which is *P. ashei*, has glabrous nodes, and hence does not agree with Michaux's description, it is rejected and the above specimens with bearded nodes from Canada are chosen as the type.

Panicum dichotomum barbulatum Wood, Class-book ed. 3. 786. 1861. This is presumably based on *P. barbulatum* Michx., though no synonymy is cited. The description given applies to *P. microcarpon*.

Panicum pubescens barbulatum Britton, Cat. Pl. N. J. 280. 1889. Presumably based on *P. barbulatum* Michx., no synonymy nor description being given.

Panicum nitidum barbulatum Chapm. Fl. South. U. S. ed. 3. 586. 1897. Based on *P. barbulatum* Michx., though the description applies to *P. microcarpon*.

Panicum gravius Hitchc. & Chase, Rhodora **8**: 205. 1906. "Type *Chase* 3620; forming top-heavy tufts, in sandy, rather dry woods, on the old Commons farm, between Centreville and Mt. Cuba, Delaware, July 30, 1906; collected by Agnes Chase. Deposited in National Herbarium."

The name *barbulatum* is misspelled "barbatum" by Persoon,[c] and "barbatulum" by Roemer and Schultes,[d] the latter spelling being given by Steudel[e] under *P. boscii* (page 253), *P. deustum* (page 255), and *P. sphaerocarpon* (page 263).

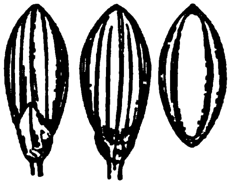


FIG. 193.—*P. barbulatum*. From type specimen.

DESCRIPTION.

Vernal form in large tufts; culms slender, 50 to 80 cm. high, erect, or spreading at the summit, lower nodes usually bearded; sheaths glabrous except a puberulent ring at the summit, the lower usually softly pubescent; blades spreading, 6 to 10 cm. long, 6 to 10 mm. wide (the lower shorter), acuminate, rounded at the base, glabrous, the lower rarely puberulent; panicles long-exserted, 6 to 11 cm. long, as wide or wider, the slender, flexuous branches fascicled, the lower spreading or drooping at maturity, spikelet-bearing at the ends; spikelets oval, 2 mm. long, 1 mm. wide, glabrous; first glume one-fourth to one-third as long as the spikelet, acute; second glume and sterile lemma equal, covering the fruit at maturity; fruit elliptic, 1.8 mm. long, 1 mm. wide, obscurely apiculate.

---

[a] See Hitchcock, Contr. Nat. Herb. **12**: 143. 1908, for an account of the American grasses in the Michaux Herbarium.

[b] See *P. microcarpon*, page 181.

[c] Syn. Pl. **1**: 84. 1805.

[d] Syst. Veg. **2**: 447. 1817.

[e] Nom. Bot. ed. 2. **2**: 253, 255, 263. 1841.

Autumnal form diffusely branched, forming very large, topheavy reclining bunches, the slender branchlets recurved, the numerous flat blades horizontally spreading.

Closely allied to *P. dichotomum* L., from which it differs in the vernal form in having usually wider blades and bearded lower nodes and fruit covered by the equal second glume and sterile lemma; the autumnal form is distinguished by the large topheavy reclining tufts.

DISTRIBUTION.

Sterile or rocky woods, Massachusetts to Michigan and south to Georgia and eastern Texas.

MASSACHUSETTS: Malden, *Frohock* in 1879 (N. E. Bot. Club Herb.).
CONNECTICUT: Southington, *Andrews* 18, *Bissell* 5577; Groton, *Graves* 12.
NEW YORK: St. Albans, *Bicknell* in 1905.
NEW JERSEY: South Amboy, *Mackenzie* 1548.
PENNSYLVANIA: Easton, *Porter* in 1895; Lancaster County, *Heller* 4776.
OHIO: Vinton, *Kellerman* 6886.
INDIANA: Dune Park, *Hill* 129 in 1906; Clarke County, *Deam* 6577; Brown County, *Deam* 6467a.
MICHIGAN: Port Huron, *Dodge* in 1899; Park Lake, *Wheeler* 17 (both in Hitchcock Herb.).
MISSOURI: Eagle Rock, *Bush* 148; Monteer, *Bush* 2877, 3529, 4733; Swan, *Bush* 3369, 3456A, 4473; Pleasant Grove, *Bush* 313, 720; Howell County, *Bush* 51; Chadwick, *Bush* 4458.
DELAWARE: Wilmington, *Canby* 10 in 1891; Centerville, *Chase* 3620, *Commons* 296.
MARYLAND: Riverdale, *Chase* 3643; Lanham, *Chase* 3484; Chesapeake Junction, *Hitchcock* 1641, 2411; Beltsville, *Chase* 3747, 3758; High Island, *Pollard* 323.

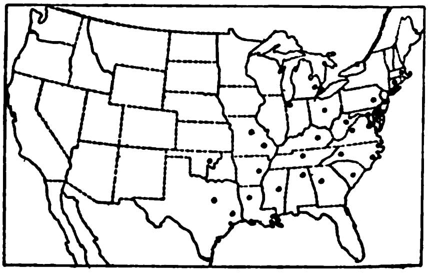


FIG. 194.—Distribution of *P. barbulatum*.

DISTRICT OF COLUMBIA: *Hitchcock* 123, 125, *Kearney* in 1897.
VIRGINIA: Smyth County, *Small* in 1892; Arlington, *Hitchcock* 124; Clifton Forge, *Tidestrom* 22.
WEST VIRGINIA: Fayette County, *Kellerman* 6903.
NORTH CAROLINA: Biltmore, *Biltmore Herb.* 800a in part; Caraleigh Junction, *Chase* 3090; Wards Mill, *Chase* 3188.
SOUTH CAROLINA: Orangeburg, *Hitchcock* 360, 1416.
GEORGIA: Stone Mountain, *Chase* 4519, *Hitchcock* 359, 1350.
KENTUCKY: Harlan County, *Kearney* 35 in part, 57 in part.
TENNESSEE: Nashville, *Gattinger* in 1884 (Univ. Tenn. Herb.).
ALABAMA: Pisgah, *Chase* 4469; Scottsboro, *Chase* 4502.
MISSISSIPPI: Saratoga, *Tracy* 8403.
ARKANSAS: Benton County, *Plank* 9, 10a, 41; Fulton, *Bush* 2532.
LOUISIANA: Shreveport, *Hitchcock* 1252.
TEXAS: Houston, *Plank* 93; Mineola, *Reverchon* 4147.
OKLAHOMA: Poteau, *Hitchcock* in 1903 (Hitchcock Herb.).

111. Panicum yadkinense Ashe.

? *Panicum dumus* Desv. Opusc. 88. 1831. "Habitat in America calidiori." The type, in the Desvaux Herbarium, is a fragment of a branch of some species in this group. The immature, glabrous spikelets, 2.3 mm. long, the second glume and sterile lemma pointed beyond the fertile lemma, suggest *P. yadkinense*, though it may be *P. barbulatum*, the pointed spikelets being due to immaturity and withering.

Panicum maculatum Ashe, Journ. Elisha Mitchell Soc. **15**: 44. 1898, not Aubl. 1775. "Collected by the writer at Raleigh, N. C., May, 1895." The type of this could not be found in Ashe's herbarium. In the National Herbarium is a specimen labeled in Ashe's handwriting, "Panicum maculatum, Raleigh, May, 1895" which is probably a duplicate type. This plant belongs to the species here described though it does not agree in all respects with the original description of *Panicum maculatum*. The spikelets are there said to be ⅞ lines long, and "about the size of those of *P. barbulatum*" [*P. microcarpon* of this monograph], and the species is said to be distinguished from *P. dichotomum* by the smaller spikelets. The specimen from Raleigh has spikelets larger than those of *P. dichotomum*, being about 2.5 mm. long. Since this specimen belongs to the species as understood by Ashe, it is probable that the description of the spikelets was based upon an admixture of *P. microcarpon*, as the two species are frequently found growing together.

Panicum yadkinense Ashe, Journ. Elisha Mitchell Soc. **16**: 85. 1900. Based on "*P. maculatum* Ashe, not *P. maculatum* Aubl."

DESCRIPTION.

Vernal form similar to that of *P. dichotomum* but culms taller and stouter, sometimes 1 meter high; sheaths usually bearing pale, glandular spots; blades 9 to 13 cm. long, 8 to 11 mm. wide, panicle about 10 to 12 cm. long, about three-fourths as wide, the long lower branches ascending; spikelets 2.3 to 2.5 mm. long, 1 mm. wide, elliptic to subfusiform, pointed, glabrous; first glume about one-third the length of the spikelet, usually blunt; second glume and sterile lemma rather faintly nerved, equal, exceeding the fruit and forming a slight point beyond it; fruit 1.9 mm. long, 0.9 mm. wide, elliptic, subobtuse.

Autumnal form erect or leaning, loosely branching from the middle nodes, the blades smaller but not conspicuously reduced.

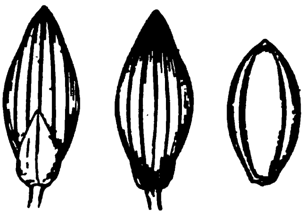


FIG. 195.—*P. yadkinense.* From duplicate type specimen of *P. maculatum* Ashe in National Herbarium.

This species differs from *P. dichotomum* in the vernal form in its larger size and longer, acute spikelets, and in the autumnal form in the comparatively few branches, which do not form a bushy crown. Occasionally the branches are rather numerous, though not closely fascicled and bushy, for example, *Harper* 1349, and *Porter* from Pennsylvania in 1895. The following two specimens, *Chase* 3072 and *Hitchcock* 1416, are referred to this species, though the spikelets are scarcely over 2 mm. long; that is, the second glume and sterile lemma do not extend into a point as in typical spikelets.

DISTRIBUTION.

Moist woods and thickets, Pennsylvania to Georgia, west to southern Illinois and Louisiana.

PENNSYLVANIA: Easton, *Porter* in 1895.

ILLINOIS: Makanda, *Gleason* in 1903; Johnson County, *Schneck* in 1902 (Hitchcock Herb.).

DELAWARE: Wilmington, *Chase* 3616.

MARYLAND: Little Falls, *Vasey* in 1884; Cabin John, *Chase* 2853, 3772; West Chevy Chase, *Chase* 2946, *Hitchcock* 361.

DISTRICT OF COLUMBIA: *House* 911, *Kearney* 28 in part.

VIRGINIA: Arlington, *Chase* 2964.

NORTH CAROLINA: Raleigh, *Ashe* in 1895, Chapel Hill, *Chase* 3059, 3061, 3072; Jacksonville, *Chase* 3192.

SOUTH CAROLINA: Orangeburg, *Hitchcock* 6, 1416½.

GEORGIA: Dublin, *Harper* 1349.

TENNESSEE: Sumner County, *Gattinger* in 1883 (Univ. Tenn. Herb.).

ALABAMA: Tensaw, *Tracy* 8029.

LOUISIANA: Lake Charles, *Hitchcock* 1164.

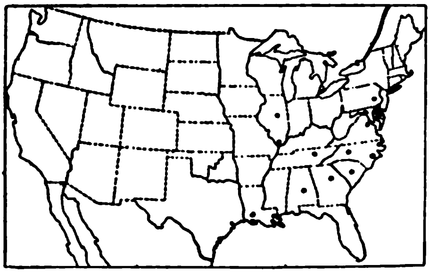


FIG. 196.—Distribution of *P. yadkinense.*

112. Panicum roanokense Ashe.

Panicum roanokense Ashe, Journ. Elisha Mitchell Soc. **15**: 44. 1898. "Type material collected by writer in dry soil, Roanoke Island, N. C. June, 1898. Also collected at Rose Bay and Mackleyville, N. C., the same month." The type could not be found in Ashe's herbarium. In the Biltmore Herbarium is a specimen from Manteo, Roanoke Island, N. C., collected by Ashe, June 10, 1898, and labeled by him *Panicum roanokense* Ashe. This is a duplicate type or possibly the type. It consists of two vernal culms with mature primary panicles.

Panicum curtivaginum Ashe, Journ. Elisha Mitchell Soc. **16**: 85. 1900. "Collected at Petit Bois Island, Mississippi, May 8, 1898 by S. M. Tracy." An unmounted specimen of the collection cited was found in a cover marked "P. curtivaginatum sp. nov." in Ashe's herbarium. No name was written on the Tracy label, which bears the number 4584. As this was the only specimen of this collection found in Ashe's herbarium it is taken as the type. It consists of a tuft of three slender vernal culms with over-mature panicles. The autumnal form is not represented, but in a specimen of *Tracy* 4584 in the National Herbarium the autumnal culms of the previous year are attached to the tuft. The spikelets are described as "quite 1.5 mm." long, but they measure 2 mm.

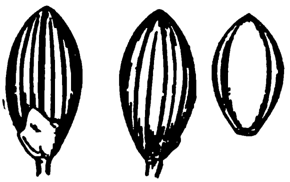


FIG. 197.—*P. roanokense.* From specimen collected by Ashe at Rose Bay.

DESCRIPTION.

Vernal form cespitose, somewhat glaucous olive green; culms erect or ascending, 50 to 100 cm. high; sheaths half as long as the internodes or less, glabrous, or the lowermost sometimes sparsely pubescent; blades at first stiffly erect, later ascending or spreading, 6 to 9 cm. long, 3 to 8 mm. wide, tapering to both ends, glabrous or with a few hairs around the base; panicles 4 to 8 cm. long, scarcely as wide, the branches spreading; spikelets 2 mm. long, 1 mm. wide, ellipsoid-obovoid, very turgid, glabrous; first glume about one-third the length of the spikelet; second glume and sterile lemma strongly nerved, subequal, the glume rather conspicuously purple-tinged at base, scarcely covering the fruit at maturity; fruit 1.6 mm. long, 0.9 mm. wide, ellipsoid.

Autumnal form erect or decumbent, branching at the middle and upper nodes, the branches numerous but not in tufts, the primary internodes elongating and becoming arched about the time the branches appear; the reduced blades more or less involute, not exceeding the 1.5 to 4 cm. long panicles; basal blades firm, erect, often as much as 5 or 6 cm. long.

The plant is glabrous throughout with exceptions mentioned; the glaucous olive green color and very turgid spikelets, purple-stained at base, are characteristic.

Harper's number 458, from Sumter County, Georgia, is doubtfully referred to this species. The first glume is very short, the panicle narrow with few, appressed branches, and the blades are long and narrow.

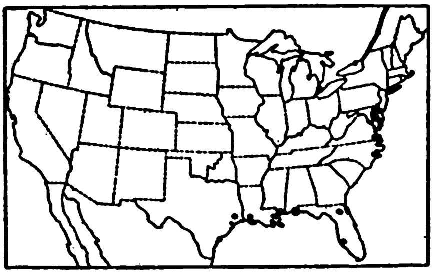


FIG. 198.—Distribution of *P. roanokense*.

DISTRIBUTION.

Open swampy woods or wet peaty meadows, southeastern Virginia to Florida and west to eastern Texas.

VIRGINIA: Near Norfolk, *Kearney* 1514, 2026.

NORTH CAROLINA: Rose Bay, *Ashe* in 1898; Lake Mattamuskeet, *Chase* 3203; Roanoke Island, *Chase* 3240, 3247; Wards Mill, *Chase* 3178.

FLORIDA: Baldwin, *Combs* 60, *Hitchcock* 987, 998; Mabel, *Curtiss* 6636; Tampa, *Hitchcock* 938½, 939.

ALABAMA: Flomaton, *Tracy* 3625 in part.

MISSISSIPPI: Petit Bois Island, *Tracy* 4584, Ocean Springs, *Tracy* 4592.

LOUISIANA: Lake Charles, *Hitchcock* 1144.

TEXAS: Waller, *Hitchcock* 1174.

113. Panicum caerulescens Hack.

Panicum caerulescens Hack.; Hitchc. Contr. Nat. Herb. **12**: 219. 1909. "The type is *Hitchcock* 706. In glade among Spartina, etc., stretching up through the tall grass, Miami, Florida, April 3, 1906, U. S. National Herbarium no. 558380." This specimen consists of two tufts, some of the culms beginning to branch and with overmature primary panicles, and some freely branching.

DESCRIPTION.

Vernal form similar to that of *P. roanokense;* culms more slender, rarely over 75 cm. high; blades ascending or spreading, commonly purplish beneath, 5 to 8 cm. long, 4 to 7 mm. wide, the margins nearly parallel for two-thirds their length; panicles usually short-exserted, 3 to 7 cm. long, half as wide or less, the branches narrowly ascending; spikelets 1.5 to 1.6 mm. long, 0.9 mm. wide, obovoid, blunt, very turgid, glabrous; first glume about one-third the length of the spikelets; second glume and sterile lemma subequal, the glume scarcely as long as the fruit at maturity; fruit 1.4 mm. long, 0.8 mm. wide, ellipsoid.

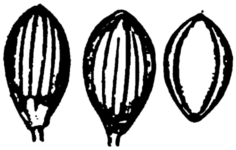


FIG. 199.—*P. caerulescens.* From type specimen.

Autumnal form erect or leaning, sometimes decumbent at base, producing short, densely fascicled branches at the middle and upper nodes, these tufts scarcely as long as the primary internodes, the reduced blades ascending, more or less involute, the reduced panicles with a few long-pediceled spikelets.

This species is distinguished from *P. roanokense* by the narrow panicles and smaller spikelets and by the tufted branches of the autumnal form.

DISTRIBUTION.

In marshes and swampy woods, southeastern New Jersey to Florida, west to Mississippi; also in the Bahamas and Cuba.

New Jersey: Cape May, *Stone* in 1909.

Virginia: Lynn Haven, *Chase* 5417, *Hitchcock* 356.

Florida: Levy County, *Combs* 803; Titusville, *Chase* 3992; Miami, *Hitchcock* 706, 715; Homestead, *Hitchcock* 690; Braidentown, *Hitchcock* 965; Myers, *Hitchcock* 897, 904, 915.

Alabama: Fort Morgan, *Tracy* 8401.

Mississippi: Horn Island, *Tracy* in 1903.

Bahamas: New Providence, *Britton & Brace* 597, 599, *Millspaugh* 2182, *Northrup* 248; Great Bahamas, *Brace* 3524, *Britton & Millspaugh* 2506, 2668; Andros, *Brace* 7015 (all in Field Mus. Herb.); New Providence, *Eggers* 4305 (Hackel Herb.), *Eggers* 4312 (Krug & Urban Herb.).

Cuba: Without locality, *Wright* 3463 in part.

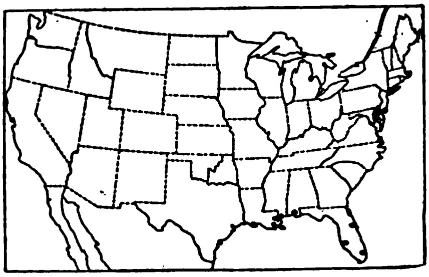


Fig. 200.—Distribution of *P. caerulescens*.

114. Panicum lucidum Ashe.

Panicum lucidum Ashe, Journ. Elisha Mitchell Soc. **15**: 47. 1898. "Collected in June 1898 by the writer in deep, shady swamps bordering Lake Mattamuskeet, N. C." There is no specimen in Ashe's herbarium from the type locality, but there is a specimen of the vernal form in the National Herbarium collected by Ashe in 1898 at Lake Mattamuskeet. This specimen is either the type or a duplicate type. The label is in Ashe's handwriting.

Panicum taxodiorum Ashe, Journ. Elisha Mitchell Soc. **16**: 91. 1900. "Type: K. K. McKenzie's no. 460. Hummocks in cypress swamps. Lake Charles, La., September 1890." The type, in Ashe's herbarium, is a specimen passing from the vernal to the autumnal form and showing the early branching condition.

DESCRIPTION.

Vernal form at first erect and resembling that of *P. dichotomum*, but the weak culms soon becoming decumbent, sometimes rooting at the lower nodes; sheaths glabrous, usually ciliate on the margin; blades thin, bright green, shining, glabrous, at first erect, but soon widely spreading, 4 to 7 cm. long, 4 to 6 mm. wide; panicles resembling those of *P. dichotomum* but fewer-flowered; spikelets 2 to 2.1 mm. long, 1 mm. wide, elliptic, glabrous (rarely obscurely pubescent); first glume about two-fifths the length of the spikelet, pointed; second glume and sterile lemma more strongly nerved than in *P. dichotomum*, both shorter than the fruit at maturity; fruit 1.7 mm. long, 0.9 mm. wide, slightly pointed.

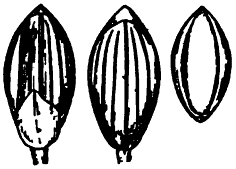


Fig. 201.—*P. lucidum*. From type specimen in National Herbarium.

Autumnal form repeatedly branching, forming large clumps or mats of slender, weak, vine-like culms, the branches elongated and diverging at a wide angle, not fascicled, the blades 2 to 4 cm. long, waxy, flat and spreading; panicles much reduced, with few long-pediceled spikelets; basal blades linear-oblong, as much as 10 cm. long.

Under a lens the oblong epidermal cells are visible between the nerves in the blades, especially on the lower surface, giving a minutely bullate surface characteristic of this species and of no other in this group.

DISTRIBUTION.

Ind.

Wet woods and sphagnum swamps, along the Coastal Plain from New York to Florida and west to eastern Texas.

New York: Woodmere, *Bicknell* in 1902; Hempstead, *Bicknell* in 1903.

New Jersey: Speedwell, *Stone* 7; Wildwood, *Pollard* in 1897; Tuckerton, *Chase* 3599; Forked River, *Chase* 3593; Atsion, *Chase* 3550, 3554; South Amboy, *Mackenzie* 2167.

Indiana: Dune Park, *Umbach* 4962.

Delaware: Ogletown, *Canby* 11.

Maryland: Beltsville, *Chase* 3743; Lanham, *Chase* 3475.

District of Columbia: *Chase* 5418, *Greene* in 1908, *Kearney* in 1897, *Pollard* 403, *Scribner* in 1894, *Steele* in 1899.

Virginia: Fort Myer, *Williams* in 1898; Lynn Haven, *Hitchcock* 364.

North Carolina: Wilmington, *Chase* 3112, 3159, *Hitchcock* 365, 367, 368, 369, 1442, 1470, *Kearney* 260; Jacksonville, *Chase* 3197; Lake Mattamuskeet, *Ashe* in 1898; Rowan County, *Small* in 1894; Biltmore, *Biltmore Herb.* 5066b, *Hitchcock* 362.

South Carolina: Aiken, *Kearney* 288 in part, Orangeburg, *Hitchcock* 363, 366.

Georgia: Clarke County, *Harper* 88; Randolph County, *Harper* 1760; Thomson, *Bartlett* 1136; Augusta, *Cuthbert* 529.

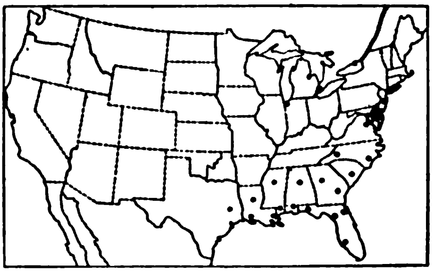


Fig. 202.—Distribution of *P. lucidum*.

Florida: Jacksonville, *Curtiss* 6601; eastern Florida, *Palmer* 632 in 1874; Lake City, *Hitchcock* 1026; Argyle, *Curtiss* 6403; Apalachicola, *Biltmore Herb.* 800b; Milton, *Chase* 4320; Washington County, *Combs* 615; Waldo, *Combs* 687 in part; Homosassa, *Combs* 934; Eustis, *Chase* 4068, *Nash* 337, 500; Bartow, *Combs* 1218; Myers, *Hitchcock* 919, Lee Co. Pl. 481.

Alabama: Auburn, *Pollard & Maxon* 54, *Tracy* 3749; Flomaton, *Hitchcock* 1059; Mobile, *Kearney* 45.

Mississippi: Taylorville, *Tracy* 8405; Magee, *Tracy* 8504; Waynesboro, *Kearney* 167; Ocean Springs, *Tracy* 95.

Louisiana: Oberlin, *Ball* 202; Lake Charles, *Mackenzie* 460.

Texas: Colmesneil, *Nealley* 35 in 1892.

In the herbarium of the Philadelphia Academy is a specimen said to be from Brazil which appears to be *P. lucidum*.

115. Panicum sphagnicola Nash.

Panicum sphagnicolum[*cola*] Nash, Bull. Torrey Club **22**: 422. 1895. "The late and much branched state was collected by the writer this summer in a sphagnum bog at Lake City, Florida, and will be distributed as No. 2500." The type, in Nash's herbarium, consists of several culms 45 to 55 cm. high, with long internodes and divaricate branches; the primary panicle is devoid of spikelets, the secondary panicles are small and few-flowered. There are three sheets of this collection in Nash's herbarium, none of which is marked type. The foregoing refers to the largest specimen.

DESCRIPTION.

Vernal form grayish olive green, cespitose; culms slender, strongly flattened, erect, or reclining, 50 to 100 cm. high; sheaths glabrous or the lowermost sparsely papillose-pilose, soon becoming divaricate and enveloping the internodes only at base; blades at first erect, later widely spreading, glabrous, 5 to 8 cm. long, 3 to 7 mm. wide; panicles narrow, 5 to 6 cm. long, the branches ascending or somewhat spreading, not spikelet-bearing at the base; spikelets 2.5 mm. long, 1.1 mm. wide, elliptic; first glume nearly half the length of the spikelet, subacute; second glume and sterile lemma strongly nerved, minutely pubescent toward the summit or glabrous, the glume shorter than the fruit; fruit 2 mm. long, 1 to 1.1 mm. wide, elliptic, subobtuse.

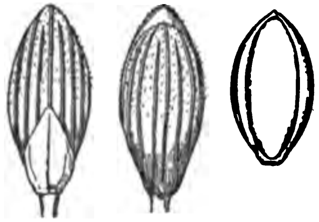


FIG. 203.—*P. sphagnicola*. From type specimen.

Autumnal form decumbent or finally prostrate-spreading, divaricately branching from all the nodes, the branches slender and elongated, sometimes rooting at the nodes; sheaths divaricately spreading from the stem, usually nearly as long as the blades; blades flat, reduced in length but not much in width, mostly 1 to 2 cm. long, or on the ultimate branchlets only 5 mm. long and 1 mm. wide; panicles rather few, reduced to a few short-pediceled spikelets; basal blades 4 to 8 cm. long, about 1 cm. wide, sometimes sparsely pilose at base.

This species is readily distinguished in the autumnal form by its slender, widely-spreading branches and divaricate sheaths. At this stage the primary sheath may subtend two branches, each with its conspicuous prophyllum, 5 to 15 mm. long, ciliate on the keels and bearing a tuft of hairs at the acuminate tip. The leaf of the second branch is much reduced and inclosed in the base of the primary sheath. *Panicum lucidum*, the only other species with a like autumnal habit, is much more slender, more leafy, and bright green and shining, and has smaller long-pediceled spikelets.

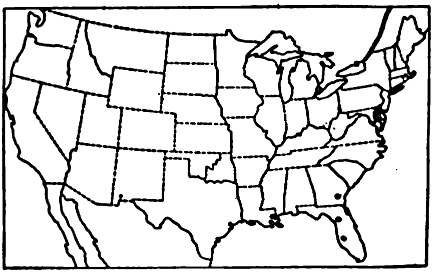


FIG. 204.—Distribution of *P. sphagnicola*.

DISTRIBUTION.

Edges of cypress swamps, in sphagnum bogs, and in similar moist, shady places, southern Georgia and Florida.

GEORGIA: Darien, *Biltmore Herb.* 5066 e (Biltmore Herb.).

FLORIDA: Lake City, *Bitting* 18, *Combs* 73, *Hitchcock* 1006, *Nash* 2500; Sanford, *Chase* 4039; Levy County, *Combs* 838; eastern Florida, *Palmer* 633 in 1874 (Gray Herb.).

Spreta.—Culms tufted, rather stiff, mostly glabrous or nearly so; ligules densely hairy, 3 to 5 mm. long; blades not over 8 mm. wide; spikelets 1 to 1.6 mm. long, pubescent or rarely glabrous, second glume and sterile lemma 5 to 7 nerved. Autumnal form with more or less tufted branchlets and much reduced leaves and panicles.

Panicle narrow, one-fourth to one-third as wide as long.....116. *P. spretum*.
Panicle open, two-thirds as wide as long, or more.
  Spikelets 1.5 mm. long................................117. *P. lindheimeri*.

Spikelets 1.3 mm. long or less.
Culms and sheaths glabrous........................119. *P. longiligulatum.*
Culms and sheaths appressed-pubescent.
Spikelets 1.2 to 1.3 mm. long.................118. *P. leucothrix.*
Spikelets not over 1 mm. long..................120. *P. urightianum.*

116. Panicum spretum Schult.

Panicum spretum Schult. Mant. **2**: 248. 1824. Based on "*Mühlenb. Descr. ub. p.* 125. *n.* 37. (sine nomine)." Muhlenberg's description is copied, but slightly rearranged, and the locality "N. Anglica" also copied. The type specimen, in the Muhlenberg Herbarium, is a vernal culm labeled "No. 2. Panicum an capillare? In moist ground. Mon. 184. M. 116a." On the folio "N. Angl." is written after this number.

Panicum nitidum densiflorum Rand & Redfield, Fl. Mt. Desert 174. 1894. "Shore of Ripples Pond (Rand)." The type, in Rand's herbarium, collected July 28, 1892, has a narrow many-flowered panicle with pubescent spikelets like the abovementioned plant in the Muhlenberg Herbarium.

Panicum eatoni Nash, Bull. Torrey Club **25**: 84. 1898. Collected by "Alvah A. Eaton * * * at Seabrook, N. H." The type, in Nash's herbarium, consists of two vernal culms with spikelets measuring 1.5 to 1.6 mm. long.

Panicum octonodum Smith, U. S. Dept. Agr. Div. Agrost. Bull. **17**: 73. *f. 369*. June 30, 1899. "Texas." This species was republished[a] with more complete description as "Panicum octonodum Scribn. & Smith, sp. nov.," with the following citation: "Waller County, Texas. Collected by F. W. Thurow, May 5, 1898." The type, in the National Herbarium, is a wholly glabrous vernal plant with glabrous spikelets 1.5 mm. long.

Panicum paucipilum Nash, Bull. Torrey Club **26**: 573. 1899. "Type collected by Mr. E. P. Bicknell, at Wildwood, New Jersey, May 30 and 31, 1897." The type, in Nash's herbarium, consists of four vernal culms, beginning to branch at the middle nodes, the sheaths sparsely ciliate toward the summit, the spikelets pubescent, 1.4 to 1.5 mm. long. *Panicum paucipilum* was described as differing from *P. eatoni* in having "much smaller spikelets with the first scale glabrous."

Panicum nitidum octonodum Scribn. & Merr. U. S. Dept. Agr. Div. Agrost. Bull. **24**: 34. 1901. Based on *P. octonodum* Smith.

Panicum spretum has been referred to *Panicum nitidum* Lam. and was discussed by Scribner[b] in an article on that species. Scribner, however, based his identification of the latter upon a tracing made by A. H. Baldwin of a specimen in the Michaux Herbarium. The type of *P. nitidum* Lam.[c] is in the Lamarck Herbarium and is different from *P. spretum*. The plant from which Baldwin's tracing was made is *P. angustifolium* or a closely allied species.[d]

DESCRIPTION.

Vernal culms tufted, 30 to 90 cm. high, erect or slightly decumbent at base, sometimes sending out rootlets from the lower nodes, glabrous, the nodes swollen; sheaths loose, shorter than the internodes, usually ciliate on the margin toward the summit, otherwise glabrous, or the lower sometimes slightly pubescent; ligules 2 to 3 mm. long; blades firm, ascending or often reflexed, 7 to 10 cm. long, 4 to 8 mm. wide, sparingly long-ciliate at the rounded base, otherwise glabrous; panicles 8 to 12 cm. long, one-fourth to one-third as wide, rather densely flowered, the branches ascending or appressed, short spikelet-bearing branchlets in the axils; spikelets 1.4 to 1.6 mm. (usually 1.5 mm.) long, 0.7 to 0.9 mm. wide, elliptic, obscurely pointed; first glume one-fourth to one-third the length of the spikelet, obtuse or subacute; second glume and sterile lemma equaling the fruit at maturity, pubescent or rarely glabrous; fruit 1.3 mm. long, 0.7 to 0.8 mm. wide, elliptic, slightly pointed.

---

[a] U. S. Dept. Agr. Div. Agrost. Circ. **16**: 5. July 1, 1899.

[b] U. S. Dept. Agr. Div. Agrost. Bull. **24**: 31. 1901.

[c] See p. 183.

[d] See Hitchcock, Contr. Nat. Herb. **12**: 148. 1908.

Autumnal form more or less reclining, branching after the maturity of the primary panicle, the earlier branches elongated, ascending but not appressed, bearing exserted panicles, the subsequent branchlets in short fascicles, the blades much reduced, sometimes minutely pubescent, overtopping the small ultimate panicles; winter rosette appearing rather early, the blades glabrous or nearly so.

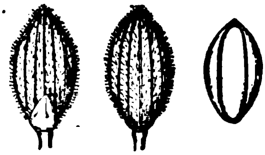


Fig. 205.—*P. spretum*. From type specimen in Muhlenberg Herbarium.

Specimens with spikelets 1.4 mm., or even 1.3 mm. long, occur. The type of *P. paucipilum* Nash is such a specimen, as are *Chase* 2333 and *Hitchcock* 553. In the herbarium of the Philadelphia Academy are a number of such specimens, some with spikelets only 1.3 mm. long. But since no other character can be correlated with the smaller spikelets, and since specimens with spikelets 1.5 mm. long are much more numerous, we are unable to separate specifically the extremes of this species.

It does not seem advisable to recognize as a subspecies the form with glabrous spikelets. Besides the Texas plants, in which the spikelets are glabrous, similar specimens have been collected in Delaware, namely, *Canby* 4, *Commons* 340, and *Hitchcock* 553. The Commons specimen consists of two plants, one with glabrous and one with pubescent spikelets, but otherwise alike.

DISTRIBUTION.

Wet and usually sandy soil, mostly near the coast, Maine to Texas; also in northern Indiana.

Maine: York County, *Fernald* 510.

New Hampshire: East Kingston, *Eaton* in 1898 (Biltmore Herb.).

Massachusetts: Essex County, *Conant* in 1881; Dedham, *Bartlett* 807.

Connecticut: Waterford, *Graves* 80, 87; East Lyme, *Graves* 157.

Rhode Island: Kingston, *Piper* in 1907.

New York: Riverhead, *Bicknell* in 1905, *Peck* 4.

New Jersey: Atsion, *Chase* 3551, 3569; Bear Swamp, *Stone* 2; Wildwood, *Bicknell* in 1897.

Pennsylvania: Westchester, *Windle* 2 (Hitchcock Herb.).

Indiana: Dune Park, *Hill* 128 in 1906, *Umbach* 1799; Miller, *Pepoon* in 1898; Michigan City, *Hill* 162 in 1906.

Delaware: Cape Henlopen, *Commons* 340; Townsend, *Canby* in 1891; Milton, *Commons* 348; Lewes, *Hitchcock* 553.

Maryland: College Park, *Novik* in 1907.

Virginia: Cape Henry, *Chase* 2333, 5421; Lynn Haven, *Hitchcock* 378, 379.

North Carolina: Wilsons Mills, *Chase* 3093.

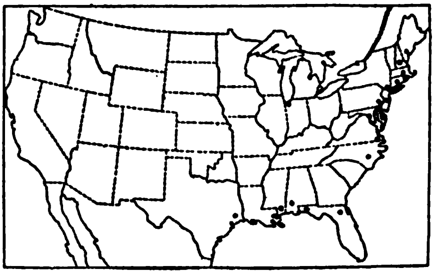


Fig. 206.—Distribution of *P. spretum*.

FLORIDA: Baldwin, *Hitchcock* 1005½; Apalachicola, *Biltmore Herb.* 6028 in part, *Chapman*.

ALABAMA: Gateswood, *Tracy* 8433; without locality, *Buckley* (Mo. Bot. Gard. Herb.).

MISSISSIPPI: Ocean Springs, *Tracy* 91, 4585; Beauvoir, *Tracy* 4594.

TEXAS: Waller County, *Hitchcock* 1175, *Thurow* 6.

117. Panicum lindheimeri Nash.

Panicum lindheimeri Nash, Bull. Torrey Club **24**: 196. 1897. "The type was collected by F. Lindheimer in 1846, no. 565." The type, in Nash's herbarium, consists of two rather slender vernal culms geniculate at the lower nodes, sparsely papillose-pilose below, beginning to branch at some of the nodes. No locality other than Texas is given on the label of the type nor on that of *Lindheimer* 565 in the National Herbarium, but on that of another specimen of this collection in the herbarium of the Missouri Botanical Garden the following data are given: "Springs, banks of the Guadeloupe, near New Braunfels."

Panicum funstoni Scribn. & Merr. U. S. Dept. Agr. Div. Agrost. Circ. **35**: 4. 1901. "Type specimen collected on the bank of Kaweah River at Three Rivers, Tulare County, Cal., no. 1286, Coville & Funston, July 26, 1891." The type, in the National Herbarium, consists of two branching culms, one sending out a rootlet at the second node (indicating that the culm was prostrate); sheaths and lower internodes rather strongly papillose-pubescent.

This is the species described under *P. nitidum* Lam. in Britton's Manual.[a]

DESCRIPTION.

Vernal culms stiffly ascending or spreading, 30 to 100 cm. high, glabrous, or lower internodes ascending-pubescent, the nodes swollen; sheaths less than half as long as the elongated internodes, ciliate on the margin, otherwise glabrous, or the lower ascending-pubescent; ligules 4 to 5 mm. long; blades usually firm, 5 to 10 cm. long, 6 to 8 mm. wide, at first ascending, soon spreading, papillose-ciliate at the rounded base, glabrous on both surfaces, or minutely puberulent beneath; panicles 4 to 7 cm. long (rarely longer), nearly as wide, branches ascending or spreading, loosely flowered; spikelets 1.4 to 1.6 mm. long, 0.8 to 0.9 mm. wide, obovate, obtuse, turgid, pubescent; first glume one-fourth as long as the spikelet or less, usually obtuse; second glume and sterile lemma scarcely equaling the fruit at maturity; fruit 1.3 to 1.4 mm. long, 0.8 mm. wide, elliptic, obtuse.

Autumnal form usually stiffly spreading or radiate-prostrate, internodes elongated, with tufts of short, appressed branches at the nodes; blades reduced, involute-pointed and often conspicuously ciliate at base.

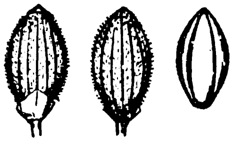


FIG. 207.—*P. lindheimeri.* From type specimen.

This common and widely distributed species is variable as to pubescence. Usually the plants are glabrous except the lower internodes and sheaths, but sometimes the pubescence extends nearly to the summit. These more pubescent specimens, such as the type of *P. funstoni* from California, *Macoun* 26338 from Ontario, *Chase* 3464 from Maryland, and *Tracy* 7947 from Texas, in the vernal form resemble less pubescent specimens of *P. tennesseense* but can be distinguished by the smaller spikelets. In the autumnal form the stiffly radiating culms with the tufts of short branches also distinguish this species.

---

[a] Man. 85. 1901.

DISTRIBUTION.

Dry sandy or sterile woods or open ground, Maine to northern Florida, and west to southern California.

Maine: North Berwick, *Parlin* 1607 (Gray Herb.).

New Hampshire: Summers Falls, *Eggleston* in 1893 (Biltmore Herb.).

Vermont: Willoughby, *E. & C. E. Faxon* in 1896.

Massachusetts: Framingham, *Smith* 734.

Connecticut: Southington, *Andrews* 14, *Bissell* 5583; East Lyme, *Graves* 158; Franklin, *Graves* 76.

New York: Bergen, *Hill* 183½ in 1907; Long Point, *Bicknell* in 1906; Mineola, *Bicknell* in 1906; Mambasset Neck, *Bicknell* in 1908; Long Island, *Bicknell* in 1902 and 1905.

Ontario: Niagara Falls, *Macoun* 26338; Ottawa, *Macoun* 65370; Port Colborne, *Macoun* 26316; Sarnia, *Dodge* 49.

New Jersey: Clifton, *Nash* in 1892; Forked River, *Chase* 3589; Atsion, *Chase* 3528, 3572, *Commons* 68, 70; Wildwood, *Heritage* in 1897; South Amboy, *Mackenzie* 2156, 2160, 2164, 2168, 2349.

Pennsylvania: Ridley, *Smith* 157.

Ohio: Ashtabula County, *Kellerman* in 1888 (Ohio State Univ. Herb.).

Indiana: Miller, *Umbach* 2353.

Illinois: Chicago, *Nelson* in 1899; Beach, *Umbach* 2242; Urbana, *Seymour* in 1880; St. Clair County, *Eggert* 237; Jackson County, *French* in 1871 in part.

Michigan: Port Huron, *Dodge* in 1909.

Wisconsin: Witches Gulch, *Cheney* 3872.

Minnesota: Sandy Beach, *MacMillan & Sheldon* 1703 (Univ. Minn. Herb.).

Missouri: Allenton, *Kellogg* 1, 4, 5; Cliff Cave, *Kellogg* 10; St. Louis, *Hitchcock* 552.

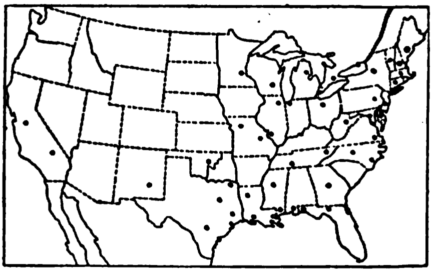


Fig. 208.—Distribution of *P. lindheimeri.*

Delaware: Wilmington, *Canby* 13, *Commons* 55, 64, 67, 71, 291, 363; Ogletown, *Commons* 66; Millsboro, *Commons* 42; Newport, *Canby* 3.

Maryland: Chesapeake Beach, *Chase* 3255, 3259, *Hitchcock* 1603; Lanham, *Chase* 3464, 3473½; Owings, *Hitchcock* 1622; Chevy Chase, *Chase* 2887; Beltsville, *Chase* 3729.

District of Columbia: *Chase* 2985, 5422, *Hitchcock* 380, *Kearney* 18, 26, *Ward* in 1879.

Virginia: Alexandria County, *Chase* 5423, in Kneucker Gram. Exs. 552; Norfolk, *Kearney* 309; Portsmouth, *Chase* 3686, *Noyes* 92.

West Virginia: Summers County, *Morris* 984.

North Carolina: Jacksonville, *Chase* 3198; Wilsons Mills, *Chase* 3108; West Durham, *Chase* 3047; Magnetic City, *Wetherby* 18, 51; Biltmore, *Boynton* 5.

Georgia: Americus, *Tracy* 3889 in part; Stone Mountain, *Hitchcock* 381.

Florida: Chattahoochee, *Tracy* 3615.

Tennessee: Ducktown, *Chambliss* 27; Coffee County, *Eggert* 34.

Alabama: Mobile, *Kearney* 32.

Mississippi: Enterprise, *Tracy* 3285; Meridian, *Tracy* 3265; Starkville, *Chase* 4449; Biloxi, *Tracy* 6736.

LOUISIANA: Calhoun, *Ball* 53; *Hitchcock* 1278, 1287; Shreveport, *Cocks* 3508; Mandeville, *Langlois* 42; Abbeville, *Langlois* 38; Lake Charles, *Chase* 4400, *Hitchcock* 1136, 1138, 1156, 1165.

TEXAS: Waller County, *Hitchcock* 1202, 1203, 1215; *Thurow* 3, 4, 12, 13, 14, 16, 19, 20, 24, 26, 27, 28, 29, 33; Columbia, *Bush* 178; Weatherford, *Tracy* 7944, 7947; La Grange, *Plank* 97; Huntsville, *Plank* 63; Gladewater, *Reverchon* 2357; Ennis, *Smith* in 1897; Kerrville, *Heller* 1752, 1888; Houston, *Bebb* 1276; Denison, *Bebb* 1428; New Braunfels, *Lindheimer* 565; Fort Smith to the Rio Grande, *Bigelow;* without locality, *Nealley* in 1884 and 1888.

OKLAHOMA: Poteau, *Hitchcock* 551; without locality, *Palmer* 384 in 1868.

NEW MEXICO: Without locality, *Wright* 2088, 2085 (the latter in Gray Herb.).

CALIFORNIA: Three Rivers, *Coville & Funston* 1286; Sacramento, *Michener* 142.

118. Panicum leucothrix Nash.

Panicum leucothrix Nash, Bull. Torrey Club **24**: 41. 1897. "Type collected by the writer in the low pine land at Eustis, Lake County, Florida, in the latter part of July, 1894, no. 1338." The type, in Nash's herbarium, consists of somewhat branching primary culms, decumbent at base. The description reads: "Spikelets obovate, about 0.65 mm. long, 0.4 mm. wide." This is evidently an error, as the spikelets of the type measure 1.2 mm. as do also those of *Nash* 334 and 467 cited with the description.

Panicum parvispiculum Nash, Bull. Torrey Club **24**: 347. 1897. "Type collected by Dr. John K. Small at Darien Junction, McIntosh Co., Ga., June 25–27, 1895." The type, in Nash's herbarium, consists of a tuft of mature vernal culms, beginning to branch. The culms and sheaths are appressed-pubescent, though less copiously so than is the type of *P. leucothrix*, and the panicles are larger. In the description the spikelets are given as 1.5 mm. long, but those of the type measure 1.3 mm.

DESCRIPTION.

Vernal plants light olive green, often purplish tinged; culms tufted, 25 to 45 cm. high, erect or ascending, appressed papillose pilose, the nodes scarcely swollen, pubescent; sheaths shorter than the internodes, papillose-pubescent, the hairs less appressed than those of the culm, rarely nearly glabrous, the margins ciliate, densely so at the summit; ligules 3 mm. long; blades rather firm, ascending or spreading, 3 to 7 cm. long, 3 to 7 mm. wide, rounded and papillose-ciliate at the base, glabrous or rarely sparsely villous on the upper surface, velvety puberulent beneath; panicles long-exserted, 3 to 8 cm. long, about three-fourths as wide, rather densely flowered, the axis appressed-pubescent, with tufts of long hairs in the axils, the branches ascending; spikelets 1.2 to 1.3 mm. long, 0.7 mm. wide, obovate-elliptic, densely papillose-pubescent; first glume about one-fourth the length of the spikelet, obtuse; second glume and sterile lemma equaling the fruit but not exceeding it; fruit 1.1 mm. long, 0.6 mm. wide, elliptic, slightly pointed.

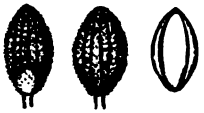


FIG. 209.—*P. leucothrix.* From type specimen.

Autumnal form ascending, usually decumbent at base, at first sending out from the lower and middle nodes long branches similar to the vernal culms, later producing appressed, more or less fascicled branchlets, the flat or somewhat involute blades not greatly reduced.

The less copious pubescence and larger panicles of the type of *P. parvispiculum* prove not to be correlated. A specimen of *Nash* 467 cited in the description of *P. leucothrix* has one panicle 8 cm. long as in the type of *P. parvispiculum*, and six small ones like those in the type of *P. leucothrix*. The New Jersey specimens, *Chase* 3536, 3556, and 3578, as also *Hitchcock* 1163 and 1398, though small plants with small panicles, are as little pubescent as is the type of *P. parvispiculum* or even less so.

DISTRIBUTION.

Low pine lands, New Jersey to Florida and Mississippi; also in Cuba.

New Jersey: Atsion, *Chase* 3536, 3556; Forked River, *Chase* 3578.

North Carolina: Wilmington, *Hitchcock* 377.

South Carolina: Orangeburg, *Hitchcock* 14, 376, 1372, 1398.

Georgia: Darien Junction, *Small* in 1895; Alapaha, *Curtiss* 6817 in part.

Florida: Jacksonville, *Combs* 6, *Kearney* 146; Washington County, *Combs* 672, 673; Chipley, *Combs* 551, 572, 617; Eustis, *Hitchcock* 800, 805, *Nash* 334, 467, 1338, 2075; Seminole, *Tracy* 7193 in part;[a] Warrenton, *Tracy* 8410.

Mississippi: Ocean Springs, *Tracy* 43.

Louisiana: St. Tammany Parish, *Cocks* 286; Lake Charles, *Hitchcock* 1163.

Cuba: Herradura, *Hitchcock* 554; without locality, *Wright* 3460 in part.

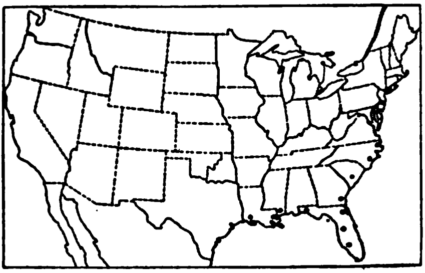


Fig. 210.—Distribution of *P. leucothrix*.

119. Panicum longiligulatum Nash.

Panicum longiligulatum Nash, Bull. Torrey Club **26**: 574. 1899. "Collected by Dr. Geo. Vasey, at Apalachicola, Florida, in 1892." The type, in Nash's herbarium, consists of two vernal culms with three autumnal culms of the preceding year attached.

Elliott[b] described this species under P. "nitidum? La Marck" as shown by the specimen so labeled in the Elliott Herbarium.

DESCRIPTION.

Vernal culms usually stout, 30 to 70 cm. high, erect, or ascending at base, glabrous; sheaths glabrous, usually much shorter than the internodes; ligules 2 to 3 mm. long; blades rather thick and firm, 4 to 8 cm. long, 4 to 8 mm. wide, glabrous on the upper surface, puberulent beneath, gradually narrowed to the sharp point, the lower ascending, the upper spreading or often reflexed; panicles ovoid, 3 to 8 cm. long, two-thirds to three-fourths as wide, rather densely flowered, the slender branches usually stiffly ascending, short spikelet-bearing branchlets in the axils; spikelets 1.1 to 1.2 mm. long, 0.7 mm. wide, elliptic, pubescent; first glume one-fourth as long as the spikelet; second glume slightly shorter than the fruit and sterile lemma; fruit 1 mm. long, 0.7 mm. wide, elliptic.

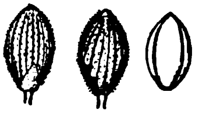


Fig. 211.—*P. longiligulatum*. From type specimen.

Autumnal culms more or less reclining, the branches spreading, usually somewhat recurved, with crowded branchlets and spreading, subinvolute, reduced blades about equaling the reduced panicles of few long-pediceled spikelets; winter rosette prominent, blades glabrous.

Smaller, more slender specimens of this species resemble less pubescent specimens of *P. leucothrix*; these may be distinguished from that species by the glabrous culms and sheaths and slightly smaller spikelets with fruit exposed at the summit.

---

[a] *Panicum longiligulatum* and *P. lindheimeri* were also distributed under this number.

[b] Bot. S. C. & Ga. 1: 128. 1816.

DISTRIBUTION.

Low pine barrens and swamps of the Coastal Plain, North Carolina to Florida and Louisiana.

North Carolina: Roanoke Island, *Chase* 3213, 3228, 3233; Wards Mill, *Chase* 3175, 3179; Wilmington, *Chase* 3136, 3145, 3150, *Hitchcock* 372.

South Carolina: Orangeburg, *Hitchcock* 16; Hartsville, *Coker* in 1908.

Georgia: Charlton County, *Harper* 1575; Sumter County, *Harper* 459; Bullock, *Harper* 839; Stone Mountain, *Hitchcock* 375.

Florida: Jacksonville, *Curtiss* 4033; Baldwin, *Hitchcock* 988, 1005; Chipley, *Combs* 569; Lake City, *Combs* 115; Milton, *Chase* 4308; Apalachicola, *Chapman;* Bay Head, *Combs* 652; Santa Rosa, *Combs* 488, *Tracy* 8398, 8423; Warrington, *Tracy* 8413; Braidentown, *Hitchcock* 957, 958; Seminole, *Tracy* 7193 in part; Myers, *Chase* 4141, 4172, 4188, *Hitchcock* 875, 881, Lee Co. Pl. 473.

Mississippi: Biloxi, *Chase* 4366, *Hitchcock* 1068; Ocean Springs, *Kearney* 288 in part, 300 in part; Petit Bois Island, *Tracy* in 1898.

Louisiana: Abita Springs, *Cocks* 422.

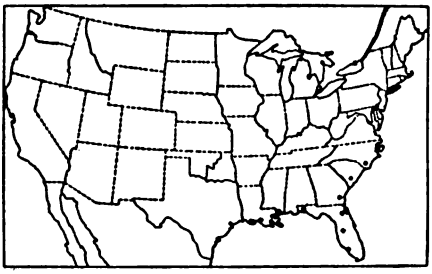


Fig. 212.—Distribution of *P. longiligulatum.*

120. **Panicum wrightianum** Scribn.

Panicum strictum Bosc; Roem. & Schult. Syst. Veg. **2**: 447. 1817, not R. Br. 1810. This is described in a note under *P. barbulatum* Michx., from a specimen collected by Bosc in "America sept." and received from him under this name. The type, in the Munich Herbarium, is marked "Panicum strictum Bosc. Carolina, comm. Bosc." Two duplicates of it are in the Willdenow Herbarium, one bearing a new name bestowed by Panzer, but we can not find that this name has been published.

Panicum minutulum Desv. Opusc. 87. 1833, not Gaud. 1826. The type, in the Desvaux Herbarium, consists of two plants beginning to branch.

Panicum wrightianum Scribn. U. S. Dept. Agr. Div. Agrost. Bull. **11**: 44. *f. 4*. 1898. "Cuba (No. 3463, C. Wright, 1865)." The type, in the National Herbarium, is the early autumnal form and is the large plant figured with the original description.

Trinius described[a] this species under the name "Panicum nodiflorum La M.," citing *P. strictum* Bosc as a synonym. The specimen in the Trinius Herbarium is marked "Carolina, Bosc. sub nom. *P. strictum* Bosc."

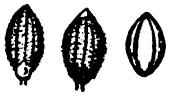


Fig. 213.—*P. wrightianum.* From type specimen.

DESCRIPTION.

Vernal culms weak and slender, ascending from a decumbent base, or rarely at first erect, 15 to 40 cm., or rarely 60 cm. high, minutely puberulent; sheaths striate, shorter than the internodes, glabrous, except the summit and ciliate margin, or puberulent; ligules 2 to 3 mm. long; blades spreading, 2 to 4 cm. long, 3 to 5 or rarely 6 mm. wide, glabrous or puberulent beneath and minutely pilose above; panicles oblong-ovate, 3 to 6 cm. long, one-third to half as wide, the branches ascending, the minute spikelets long-pediceled; spikelets 0.95 to 1 mm. long, 0.5 mm. wide, ellipsoid, turgid, subacute, pubescent; first glume about one-fourth as long as the spikelet; second glume shorter than the fruit and sterile lemma; fruit 0.8 mm. long, 0.5 mm. wide, subacute.

---

[a] Gram. Pan. 241. 1826.

Autumnal form decumbent-spreading, the culms sending out from the lower and middle nodes numerous ascending branches, becoming somewhat bushy branched, the flat or subinvolute blades and secondary panicles not much reduced.

DISTRIBUTION.

Along the margins of streams and ponds in sandy or mucky soil, southern New Jersey to Florida and west to Texas; also in Cuba.

NEW JERSEY: Bennett, *Stone* in 1909.

NORTH CAROLINA: Wilsons Mills, *Chase* 3096; Wilmington, *Chase* 3135, *Hitchcock* 373, 374, *Kearney* 246.

GEORGIA: Hawkinsville, *Biltmore Herb*. 7080a (Biltmore Herb.).

FLORIDA: Live Oak, *Curtiss* 6652; Madison County, *Combs* 290; De Funiak Springs, *Combs* 441, 477, *Curtiss* 5912; Monticello, *Combs* 347, 354; Washington County, *Combs* 552, 664; Pensacola, *Combs* 524; Grasmere, *Combs* 1068, 1087; Marianna, *Tracy* 3644.

ALABAMA: Mobile, *Kearney* 49 in part.

MISSISSIPPI: Biloxi, *Kearney* 307; Horn Island, *Tracy* 2861; Petit Bois Island, *Tracy* 4611.

TEXAS: Without locality, *Wright* (Gray Herb.).

CUBA: Without locality, *Wright* 3463 in part.

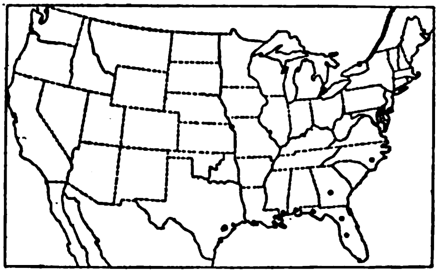


FIG. 214.—Distribution of *P. wrightianum*.

Lanuginosa.—Plants more or less pubescent throughout, usually conspicuously so; ligules densely hairy, 2 to 5 mm. long; blades not over 1 cm. wide, usually narrower; spikelets 1.3 to 3 mm. long, pubescent, the second glume and sterile lemma 5 to 7 or in the larger spikelets 7 to 9-nerved. Autumnal form usually freely branching, secondary leaves and panicles much reduced.

These species were usually referred by the earlier American authors to *P. pubescens* Lam. or Michx.

Spikelets not over 2 mm. long.
  Plants grayish, velvety-pubescent.
    Spikelets 1.4 to 1.5 mm. long; autumnal blades involute-pointed (see also *P. albemarlense*)....128. *P. auburne*.
    Spikelets 1.8 to 2 mm. long; autumnal blades flat.
      Plants dark or olive green when dry; spikelets 1.9 to 2 mm. long.
        Freely branching from lower nodes, decumbent; vernal blades puberulent on both surfaces........................130. *P. olivaceum*.
        Sparingly branching from middle nodes, erect; vernal blades sparingly pilose on upper surface....................129. *P. thurowii*.
      Plants light or yellow green when dry.
        Autumnal form prostrate, branching from base and lower nodes, forming close mats; blades not ciliate; around hot springs............................135. *P. thermale*.

- Autumnal form ascending or spreading, branching from middle and upper nodes; the reduced, fascicled blades strongly ciliate.
  - Culms 40 to 70 cm. high, autumnal culms usually 40 to 50 cm. long; southeastern U. S. .... 126. *P. lanuginosum.*
  - Culms 20 to 40 cm. high, autumnal culms usually 20 to 30 cm. long, the early branches zigzag; West Indies .... 127. *P. acuminatum.*

- **Plants** pubescent, often villous, but not velvety.
  - Culms conspicuously pilose with long, horizontally spreading hairs; branching before expansion of primary panicles .... 131. *P. praecocius.*
  - Culms variously pubescent, if pilose the hairs not long and horizontally spreading.
    - Vernal blades glabrous or nearly so on the upper surface, firm in texture.
      - Autumnal culms branching from the lower nodes, forming a spreading bunch 10 to 15 cm. high; Pacific slope .... 133. *P. occidentale.*
      - Autumnal culms branching from the middle nodes, forming widely spreading mats; Atlantic slope (see also form of *P. huachucae silvicola*) .... 125. *P. tennesseense.*
    - Vernal blades pubescent on upper surface, sometimes pilose near base and margins only.
      - Spikelets 1.3 to 1.5 mm. long; vernal blades long-pilose on upper surface.
        - Autumnal form widely decumbent-spreading, forming a mat; vernal culms soon geniculate-spreading; plants olivaceous .... 122. *P. albemarlense.*
        - Autumnal form erect or leaning, never forming a mat; plants yellowish-green.
          - Axis of panicle pilose, panicle branches tangled, the lower drooping .... 123. *P. implicatum.*
          - Axis of panicle puberulent only, panicle branches not tangled, the lower ascending .... 121. *P. meridionale.*
      - Spikelets 1.6 to 2 mm. long; vernal blades pilose or pubescent.
        - Upper surface of blades pilose; spikelets 1.8 to 2 mm. long; autumnal form decumbent-spreading.
          - Spikelets pointed; culms weak and lax .... 136. *P. languidum.*
          - Spikelets obtuse; culms not weak and lax.

Culms leafy below, branching from base and lower nodes; Maine to Minn..........132. *P. subvillosum.*

Culms evenly leafy, branching from upper nodes; Pacific slope............134. *P. pacificum.*

Upper surface of blades appressed-pubescent or pilose toward the base only; spikelets 1.6 to 1.8 mm. long; autumnal form not decumbent-spreading.

Blades stiff, erect...................124. *P. huachucae.*

Blades lax, spreading...............124a. *P. huachucae silvicola.*

Spikelets 2.2 mm. or more long.

Spikelets 2.2 to 2.4 mm. long.

Pubescence on culms horizontally spreading; autumnal form freely branching.....................137. *P. villosissimum.*

Pubescence on culms appressed or ascending; autumnal form rather sparingly branching.

Upper internodes shortened, the leaves approximate, blades often equaling the panicle; pubescence sparse and stiff...............140. *P. scoparioides.*

Upper internodes not shortened, the copious pubescence silky.........................138. *P. pseudopubescens.*

Spikelets 2.7 to 2.9 mm. long.

Culms stiff; blades conspicuously ciliate; southern Atlantic coast...............................139. *P. ovale.*

Culms weak; blades not ciliate; Pacific coast........141. *P. shastense.*

121. **Panicum meridionale** Ashe.

Panicum meridionale Ashe, Journ. Elisha Mitchell Soc. **15**: 59. 1898. "North Carolina, Chapel Hill in June, 1898; and Jonas Ridge, Burke Co., June, 1893. * * * Dry rocky woods." The type could not be found in Ashe's herbarium. In the National Herbarium are two specimens, one from Chapel Hill and one from Burke County, collected by Ashe and labeled in his writing as this species. The first specimen is a tuft of very slender vernal culms, each bearing but three distant leaves, with panicles 2 to 3 cm. long. This specimen does not agree so well with the description as the Burke County plant, which is therefore chosen to represent the type. In this the culms are numerous, less delicate, erect, 10 to 15 cm. high. The spikelets are described as glabrous, but in both specimens they are minutely pubescent.

Panicum filiculme Ashe, Journ. Elisha Mitchell Soc. **15**: 59. 1898, not Hack. 1895. "Dry soil, middle North Carolina to Georgia in the Piedmont plateau region. * * * North Carolina: Ashe; Chapel Hill, 1898. Georgia: Small; Stone Mt., Aug. 1895." The type could not be found in Ashe's herbarium. In the National Herbarium is a specimen from Stone Mountain, Georgia, collected by Ashe, which answers to the description. The culms are erect, slender, 12 to 20 cm. high, with small panicles about 2 cm. long. The culms are the early autumnal form with a few erect fascicles of secondary branches. This specimen differs somewhat in aspect from the type of *P. meridionale*, but they are forms of the same species.

? *Panicum microphyllum* Ashe, Journ. Elisha Mitchell Soc. **15**: 61. 1898. "Collected by the writer June, 1898, at Chapel Hill, N. C., in moist sunny woods." The type could not be found in Ashe's herbarium, nor any specimens so named by him. The description seems to apply to the autumnal form of *P. meridionale*, though the culms and sheaths described as "glabrous or pubescent," seems to indicate that some material of *P. tenue* or other species of the Ensifolia was mixed with it.

Panicum unciphyllum meridionale Scribn. & Merr. Rhodora 3: 123. 1901. Based on *P. meridionale* Ashe.

DESCRIPTION.

Vernal form tufted; culms 15 to 40 cm. high, pilose below, the upper portion and the axis of the panicle appressed-pubescent, or the latter often nearly glabrous; lower sheaths pilose, upper minutely appressed-pubescent; ligules 3 to 4 mm. long; blades 1.5 to 4 cm. long, 2 to 4 mm. wide, long-pilose on the upper surface, the hairs erect, less dense than in *P. implicatum;* panicles 1.5 to 4 cm. long, nearly or quite as wide, ovate or rhombic, the branches ascending; spikelets 1.3 to 1.4 mm. long, 0.8 mm. wide, obovate, obtuse, minutely papillose-pubescent; first glume one-fourth to one-third the length of the spikelet, acute or subacute; second glume and sterile lemma equal, as long as the fruit at maturity; fruit 1.2 mm. long, 0.8 mm. wide; broadly elliptic, obscurely pointed.

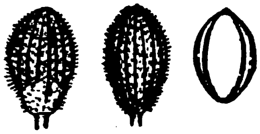


FIG. 215.—*P. meridionale*. From type specimen.

Autumnal form erect or nearly so, with fascicled branchlets from all the nodes; leaves and panicles not greatly reduced, the latter included late in the season; winter leaves lanceolate, long-pilose toward the base, the rosette formed rather late.

This species resembles *P. implicatum* in the vernal form but is more slender and less pilose. The axis of the panicle in *P. implicatum* is pilose, while in *P. meridionale* it is typically glabrous or somewhat puberulent but not pilose.

A late autumnal specimen, *Chase* 1472, Irondale, Chicago, Ill., is referred here, doubtfully, because of the scanty pubescence, but the presence of papillæ suggests that the hairs have been worn off; the spikelets are 1.4 mm. long.

Exceptional specimens pilose in the panicle closely approach slender specimens of *P. implicatum*. This form is represented by *Wheeler* 24 and 28.

DISTRIBUTION.

Sandy or sterile woods and clearings, Rhode Island to Wisconsin and south to Alabama.

CONNECTICUT: Waterford, *Graves* 171, 172; South Glastonbury, *Wilson* 1258.

RHODE ISLAND: Kingston, *Collins* in 1908.

NEW YORK: Lawrence, *Bicknell* in 1902 and 1906; Valley Stream, *Bicknell* in 1905; Hempstead, *Bicknell* in 1908; Hewlett, *Bicknell* in 1906; Woodmere, *Bicknell* in 1902.

NEW JERSEY: Oradell, *Mackenzie* 2477; Atsion, *Chase* 3534½; South Amboy, *Mackenzie* 2710.

PENNSYLVANIA: Refton, *Heller* 4790.

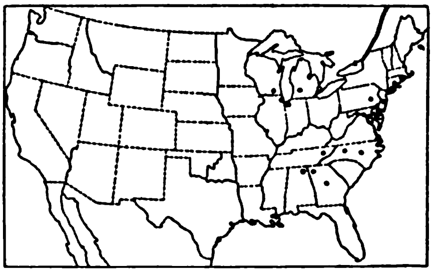


FIG. 216.—Distribution of *P. meridionale*.

INDIANA: Lake County, *Bebb* 2815, 2936, 2947; Dune Park, *Hill* 98 in 1905, *Umbach* 1087, 1800.

ILLINOIS: Chicago, *Hill* 145 in 1906.

MICHIGAN: Port Huron, *Dodge* in 1909; Twin Lakes, *Wheeler* 24, 28; Magician Lake, *Umbach* 2155.

WISCONSIN: Lacrosse, in 1899, name of collector not given (Univ. Vt. Herb.).

DELAWARE: Deakynes Landing, *Commons* 286.

MARYLAND: Between Chesapeake Beach and Chesapeake Junction, *Hitchcock* 1629, 1636; Lanham, *Chase* 3466, *Hitchcock* 2395; Patuxent, *House* 957.

DISTRICT OF COLUMBIA: *Chase* 2428, *Hitchcock* 384, *Pollard* 353, *Ward* in 1878.

VIRGINIA: Portsmouth, *Chase* 3683; Dismal Swamp, *Tyler* in 1905.

NORTH CAROLINA: Highlands, *J. D. Smith* in 1882, Wilsons Mills, *Chase* 3100.

GEORGIA: Blue Ridge, *Ruth* in 1900; Rabun County, *House* 2258; Stone Mountain, *Hitchcock* 385.

TENNESSEE: Ducktown, *Chambliss* 24, 25.

ALABAMA: Pisgah, *Chase* 4478.

122. Panicum albemarlense Ashe.

Panicum velutinum Bosc; Spreng. Syst. Veg. **1**: 315. 1825, not Meyer, 1818. This herbarium name is given as a synonym under *P. lanuginosum* Ell. and credited to "W. herb." The specimen, in the Willdenow Herbarium, is the vernal form of *P. albemarlense*.

Panicum albemarlense Ashe, Journ. Elisha Mitchell Soc. **16**: 84. 1900. "Common in well drained open woods in Beaufort and Hyde counties, N. C., where the type material was collected by me May 26, 1899, near Scranton." The type specimen has been arbitrarily chosen from unmounted material in Ashe's herbarium in a cover marked on the outside "*P. albemarlense*," and on a sheet upon which is written "Panicum ? very common in N. E. Beaufort County, also in Hyde, in open woods well drained." There is nothing to indicate in which place the specimens were collected, except the published statement cited above. All the specimens are of the vernal form.

DESCRIPTION.

Vernal form olivaceous; culms cespitose, 25 to 45 cm. high, slender, at first erect or ascending, soon becoming geniculate at the lower nodes and more or less spreading; culms, sheaths, and blades grayish-villous, the blades 4.5 to 7 cm. long, 3 to 6 mm. wide, ascending, the upper surface puberulent as well as long-villous; panicles 3 to 5 cm. long, about as wide, more densely flowered than *P. meridionale*, axis puberulent, branches ascending; spikelets 1.4 mm. long, 0.9 mm. wide, blunt and turgid, pilose; first glume about two-fifths the length of the spikelet; second glume and sterile lemma subequal, the glume scarcely equaling the fruit at maturity; fruit 1.25 mm. long, 0.9 mm. wide, obtuse.

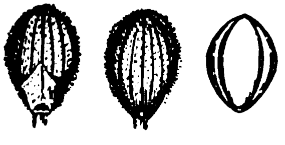


FIG. 217.—*P. albemarlense*. From type specimen.

Autumnal form widely decumbent-spreading or ascending, freely branching at all but the uppermost nodes, the branches narrowly ascending, the reduced, flat blades mostly exceeding the panicles.

Allied to *P. meridionale*, from which it differs mostly in the usually stouter, spreading culms, which often form large mats in the autumn, and in the softer, denser pubescence which gives the entire plant a grayish tone.

Two specimens from Wilsons Mills, N. C., *Chase* 3100½ and 3106 are doubtfully referred here. The spikelets are 1.6 mm. long, and the whole plants suggest a very slender vernal form of *P. aciculare*.

DISTRIBUTION.

Low sandy woods or open ground of the Coastal Plain, Connecticut to Michigan and south to North Carolina.

MASSACHUSETTS: Nantucket Island, *Bicknell* in 1899 and 1906.

CONNECTICUT: Waterford, *Graves* in 1898.

NEW YORK: Garden City, *Bicknell* in 1906; Woodmere, *Bicknell* in 1902; Valley Stream, *Bicknell* in 1904; Hempstead, *Bicknell* in 1906.

NEW JERSEY: Grenloch, *Heritage* in 1897 (Phila. Acad. Herb.).

PENNSYLVANIA: Woodbourne, *Jahn* in 1904 (Phila. Acad. Herb.).

INDIANA: Dune Park, *Hill* 53 in 1907.

MICHIGAN: Cass County, *Pepoon* in 1904.

MARYLAND: Chesapeake Beach, *Hitchcock* 1612; Chesapeake Junction, *Hitchcock* 2409; Beltsville, *Chase* 3745, 3757, 3762, 3825; Pindell, *Hitchcock* 1628.

DISTRICT OF COLUMBIA: *Hitchcock* 126, *Kearney* 27.

VIRGINIA: Cape Henry, *Chase* 2339.

NORTH CAROLINA: Washington, *Ashe* in 1899; Scranton, *Chase* 3201; Beaufort and Hyde counties, *Ashe*.

TENNESSEE: Tullahoma, *Biltmore Herb.* 9953c (Biltmore Herb.).

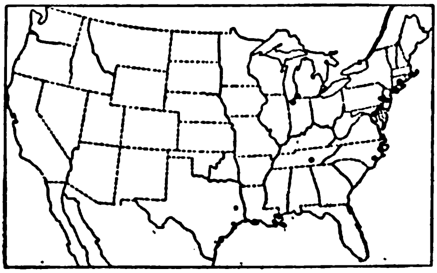


FIG. 218.—Distribution of *P. albemarlense*.

123. Panicum implicatum Scribn.

Panicum implicatum Scribn. U. S. Dept. Agr. Div. Agrost. Bull. **11**: 43. *f. 2*. 1898. "Low marshy ground, Cape Elizabeth, Maine. Collected by F. Lamson-Scribner, July 26, 1895." The type, in Hitchcock's herbarium, consists of several plants in the early branching state, 45 to 50 cm. high, with mature primary panicles 5.5 cm. long and smaller secondary ones. There is a duplicate type in the National Herbarium.

Panicum unciphyllum implicatum Scribn. & Merr. Rhodora **3**: 123. 1901. Based on *Panicum implicatum* Scribn.

DESCRIPTION.

Vernal form with tufted, slender culms 20 to 55 cm. high, erect or ascending, papillose-pilose, with spreading hairs; sheaths shorter than the internodes, papillose-pilose; ligules 4 to 5 mm. long; blades firm, erect or ascending, 3 to 6 cm. long, 3 to 6 mm. wide, rarely longer or wider, more or less involute-acuminate, the upper surface pilose with erect hairs 3 to 4 mm. long, the lower surface papillose-pubescent with subappressed hairs; primary panicles long-exserted, pyramidal in outline, 3 to 6 cm. long, about as wide, the axis long-pilose, the branches flexuous, in typical specimens tangled and the lower drooping; spikelets 1.5 mm. long, 0.9 mm. wide, obovate, obtuse, papillose-pilose; first glume about one-fourth the length of the spikelet, obtuse; second glume and sterile lemma equaling the fruit at maturity; fruit 1.3 mm. long, 0.9 mm. wide, broadly elliptic, obtuse, very minutely umbonate.

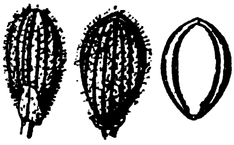


FIG. 219.—*P. implicatum*. From type specimen.

Autumnal form erect or spreading, rather loosely branching from the lower and middle nodes, the primary culms becoming more or less geniculate below; leaves and panicles reduced; winter leaves lanceolate-ovate, pilose above; the rosette appearing late.

The type specimens of *P. meridionale* and *P. implicatum* as well as the greater number of the specimens referred to each respectively seem specifically distinct, *P. implicatum* being distinguished by the implicate panicle, with pilose axis and drooping branches, and less delicate culms than those of *P. meridionale;* but in occasional specimens these distinctions do not hold good. These intermediate specimens are referred to *P. meridionale* or to *P. implicatum* according to their apparent affinity to the type of the one or the other respectively. More robust specimens of *P. implicatum* approach *P. huachucae.* One specimen, *Dodge* 38, Port Huron, Michigan, has the characteristic habit of *P. implicatum,* but the axes of the implicate panicles are not pilose.

DISTRIBUTION.

Wet meadows, bogs, and sandy soil, cedar and hemlock swamps, Nova Scotia to New York and west to Michigan and Iowa.

Nova Scotia: Digby, *Howe & Lang* 190 (Gray Herb.).

New Brunswick: St. Andrews, *Fowler* in 1900.

Quebec: Lake Memphremagog, *Churchill* in 1902 (Gray Herb.).

Maine: Cape Elizabeth, *Chase* 3454, 3459, *Scribner* in 1895; East Auburn, *Merrill* 2, 7, 8, 9, 16; Manchester, *Scribner* 14, 15; Cumberland, *Ricker* 1277; North Berwick, *Parlin* 1188, 1198; Farmington, *Fernald* 500; Foxcroft, *Fernald* 502; Orono, *Fernald* 504; Fayette, *Chase* 3392; Chesterville, *Chase* 3436; Canton, *Parlin* 2000.

New Hampshire: Jaffrey, *Hitchcock* 127; White Mountains, *Hitchcock* 130.

Vermont: Barnet, *Blanchard* in 1888; Burlington, *Hitchcock* 132.

Massachusetts: Cambridge, *Blankinship* in 1896.

Connecticut: Southington, *Andrews* 20, *Bissell* 5590, 5622, 12002; Waterford, *Graves* 165; Griswold, *Graves* 78.

Rhode Island: Buttonwoods, *Bailey* in 1890 (Brown Univ. Herb.).

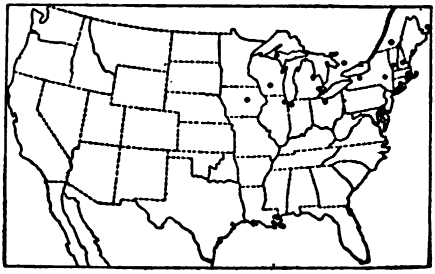


Fig. 220.—Distribution of *P. implicatum.*

New York: Preston, *Coville* in 1884; Washington County, *Burnham* 25; Utica, *Haberer* in 1900; Verona, *Haberer* in 1900; Sylvan Beach, *House* 1231; Chautauqua, *Hill* 184 in 1907; Jamaica, *Bicknell* in 1904; Valley Stream, *Bicknell* in 1905; Rosedale, *Bicknell* in 1904.

Ontario: Algonquin Park, *Macoun* 22024.

Ohio: Sandusky, *Morris* A55; Hawks, *Kellerman* 6885.

Indiana: Miller, *Chase* 1546; Dune Park, *Hill* 99 in 1905, 185 in 1907; Porter County, *Hill* 163 in 1906.

Illinois: Oregon, *Waite* in 1885; Manito, *Wilcox* 57; Chicago, *Nelson* 66.

Michigan: Port Huron, *Dodge* in 1909; Keweenaw County, *Farwell* 597b, 643a; Port Alger, *Wheeler* in 1895.

Wisconsin: Sauk County, *Eggert* in 1903 (Mo. Bot. Gard. Herb.).

Iowa: Iowa City, *Shimek* 10; without locality, *Ball* 817.

124. Panicum huachucae Ashe.

Panicum nitidum pilosum Torr. Fl. North. & Mid. U. S. 146. 1824, not *P. pilosum* Swartz, 1788. "In dry woods, &c. New-York." The type, in the Torrey Herbarium, consists of four vernal culms with immature panicles.

Panicum huachucae Ashe, Journ. Elisha Mitchell Soc. **15**: 51. 1898. "Based on: Lemmon: *P. dichotomum* var. *nitidum*, subvar. *barbulatum;* Huachuca Mountains, Arizona, 1882." Such a specimen could not be found in Ashe's herbarium, but in the National Herbarium is a specimen so labeled which agrees with the description and which is doubtless the type, since Mr. Ashe visited the National Herbarium in the summer of 1898 and took notes on species of Panicum. This specimen consists of several slender culms beginning to branch and with overmature panicles.

Panicum lanuginosum huachucae Hitchc. Rhodora **8**: 208. 1906. Based on *Panicum huachucae* Ashe.

This species has been referred by some recent American authors[a] to *Panicum unciphyllum* Trin.[b]

DESCRIPTION.

Vernal form cespitose, usually stiffly upright, light olivaceous, often purplish, harsh to the touch from the copious, spreading, papillose pubescence of culms and leaves; culms 20 to 60 cm. high; nodes bearded with spreading hairs; sheaths shorter than the internodes; ligules 3 to 4 mm. long; blades firm, stiffly erect or ascending, 4 to 8 cm. long, 6 to 8 mm. wide, the veins inconspicuous, the upper surface copiously short-pilose, especially toward the base, the lower surface densely pubescent; panicle rather short-exserted until maturity, 4 to 6 cm. long, nearly as wide, rather densely flowered, the axis and often the branches pilose, the flexuous, fascicled branches ascending or spreading, short spikelet-bearing branchlets at base of the fascicles; spikelets 1.6 to 1.8 mm. long, 1 mm. wide, obovate, obtuse, turgid, papillose-pubescent; first glume about one-third the length of the spikelet; second glume and sterile lemma subequal, scarcely covering the fruit at maturity; fruit 1.5 to 1.6 mm. long, 1 mm. wide, elliptic, obscurely apiculate.

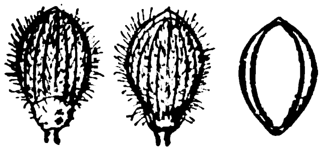


Fig. 221.—*P. huachucae.* From type specimen in National Herbarium.

Autumnal form stiffly erect or ascending, the culms and sheaths sometimes papillose only, the branches fascicled, the reduced, crowded leaves ascending, the blades 2 to 3 cm. long, much exceeding the reduced panicles.

This species is variable as to amount of pubescence and as to the stiffness of the leaves, and it intergrades with the following subspecies. A specimen collected by Havard at El Paso, Texas, is referred here, though it is an unusual form with wider blades and spreading habit suggesting *P. lindheimeri*.

DISTRIBUTION.

Prairies and open ground, Maine to South Dakota and south to North Carolina and southern California.

Maine: North Berwick, *Parlin* 1186, 1189.

Vermont: Burlington, *Hitchcock* 133.

Massachusetts: Wellesley, *Smith* 737.

Connecticut: Southington, *Andrews* 70; New London, *Graves* 4.

New York: Vaughns, *Burnham* in 1897; Pavilion, *Hill* 182 in 1907; Westfield, *Hill* 171 in 1907; Jamaica, *Bicknell* in 1905; Hempstead, *Bicknell* in 1903; Woodmere, *Bicknell* in 1907.

Ontario: Galt, *Herriot* 14; Niagara, *Macoun* 26337; Belleville, *Macoun* 29369; Long Point, *Herriot* 44.

New Jersey: Netcong, *Mackenzie* 2075.

---

[a] Scribner and Merrill, Rhodora **3**: 121. 1901; Nash in Britton, Man. 1040. 1901.

[b] See synonymy under *P. tenue* Muhl., page 259.

PENNSYLVANIA: Easton, *Porter* in 1893.

OHIO: Big Darby, *Morris* 9; Lancaster, *Kellerman* 6769; Steubenville, *Kellerman* 6785; Mount Gilead, *Kellerman* 6873; Vinton, *Kellerman* 6893.

INDIANA: Clark Junction, *Bebb* 520, *Umbach* 1816; Gibson, *Hill* 98 in 1908.

ILLINOIS: Waukegan, *Gleason & Shobe* 324; Chicago, *Hill* 130 in 1905, *Somes* 210; Beach, *Umbach* 2237, 2244; Williamsfield, *V. H. Chase* 1858; Waucanda, *Hill* 217 in 1898.

MICHIGAN: Detroit, *Farwell* 643b, 1382 in part; Howard Terrace, *Wheeler* in 1899.

WISCONSIN: Northwest Wisconsin, *Wood* in 1889; Doherty Lake, *Cheney* 1107; Drummond, *Cheney* 4104; Madeline Island, *Cheney* 5638.

MINNESOTA: Nicollet, *Ballard* in 1892; Spring Lake, *Ballard* 544; Minneapolis, *Sandberg* 316; Center City, *Sandberg* 666; Thompson, *Sandberg* 385.

SOUTH DAKOTA: Black Hills, *Rydberg* 1099.

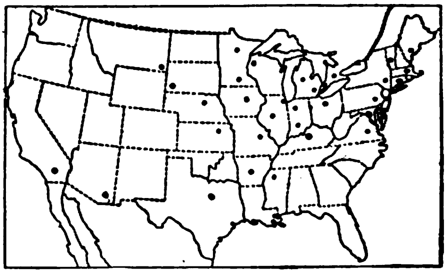


FIG. 222.—Distribution of *P. huachucae*.

IOWA: Mount Pleasant, *Mills* in 1894; Fayette County, *Fink* 562.

NEBRASKA: Ewing, *Bates* 1003; Thomas County, *Rydberg* 1368.

MISSOURI: Allenton, *Kellogg* 16.

KANSAS: Manhattan, *Hitchcock* 2528, *Kellerman* in 1888.

DELAWARE: Wilmington, *Canby* in 1898.

DISTRICT OF COLUMBIA: *Sudworth* in 1889.

VIRGINIA: Ashland, *De Chalmot.*

KENTUCKY: Harlan County, *Kearney* 58 in part; Lexington, *Short* 9 (Gray Herb.).

MISSISSIPPI: Agency, *Tracy* 3190.

ARKANSAS: Fulton, *Bush* 2332 (Mo. Bot. Gard. Herb.).

TEXAS: El Paso, *Havard* in 1881.

MONTANA: Without locality, *Williams* in 1887.

ARIZONA: Huachuca Mountains, *Lemmon* 2907.

CALIFORNIA: San Bernardino Mountains, *Abrams* 2737 (Gray Herb.).

The Montana specimen, though from beyond the known range of this species, is fairly typical.

124a. Panicum huachucae silvicola Hitchc. & Chase.

Panicum dichotomum fasciculatum Torr. Fl. North. & Mid. U. S. 145. 1824, not *P. fasciculatum* Swartz, 1788. "In sandy fields, New-Jersey." The type, in Columbia University Herbarium, is a late autumnal specimen with tufts of short branches at the nodes.

Panicum nitidum ciliatum Torr. Fl. North. & Mid. U. S. 146. 1824, not *P. ciliatum* Ell. 1816. "In the pine-barrens of New-Jersey." The type, in Columbia University Herbarium, is a single vernal culm.

Panicum huachucae silvicola Hitchc. & Chase in Robinson, Rhodora 10: 64. 1908. "Type, District of Columbia, *Chase*, no. 2400, in National Herbarium." The specimen is a small clump of vernal culms beginning to branch and with mature primary panicles.

This is the form described by Scribner and Merrill[a] under the name *P. lanuginosum* Ell.

---

[a] U. S. Dept. Agr. Div. Agrost. Circ. 29: 7. 1901.

DESCRIPTION.

Vernal form taller and more slender, brighter green and less densely pubescent than in *P. huachucae;* culms 30 to 75 cm. high, suberect or ascending, papillose-pilose with spreading hairs; nodes bearded with reflexed hairs, usually a glabrous ring below; sheaths papillose-pilose; blades thin, lax and spreading, 5 to 10 cm. long, 6 to 12 mm. wide, the veins inconspicuous; upper surface sparsely short-pilose or with copious long hairs toward the base; lower surface pubescent and with a satiny luster; panicles exserted, 5 to 8 cm. rarely 10 cm. long, nearly as wide, rather densely flowered, the axis pilose, the flexuous, fascicled branches spreading, with short spikelet-bearing branchlets at the base of the fascicles; spikelets 1.6 to 1.8 mm. long, 0.8 to 1 mm. wide, elliptic-obovate, at maturity subobtuse, pubescent with spreading hairs; first glume one-fourth to one-third the length of the spikelet, obtuse or subacute; second glume and sterile lemma subequal, slightly shorter than the fruit at maturity; fruit 1.5 mm. long, 0.8 to 0.9 mm. wide, elliptic, subacute.

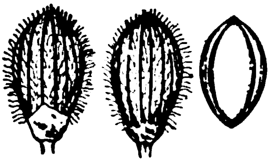


FIG. 223.—*P. huachucae silvicola.* From type specimen.

Autumnal form more or less decumbent, the numerous fascicled branches shorter than the primary internodes, at least late in the season, the reduced spreading leaves sometimes nearly glabrous above except for a few long hairs near the base.

The following specimens represent an extreme form with the upper surface of the blades nearly or quite glabrous, thus approaching *P. tennesseense.* They differ from that species in the thin, lax blades, with no marked white margin and without conspicuous veins. Maine: Westbrook, *Ricker* 666; Orono, *Fernald* 503; Massachusetts: Framingham, *Smith* 739; Connecticut: Franklin, *Graves* 166; Rhode Island: Providence, *Battey* in 1886; New York: Ithaca, *Ashe* in 1898; New Jersey: Bear Swamp, *Stone* 3; Pennsylvania: Easton, *Porter* in 1898; Germantown, *Stone* 5, 9; Iowa: Appanoose County, *Fitzpatrick* 38; District of Columbia: *Kearney* 33, *Steele* in 1900; North Carolina: Chapel Hill, *Chase* 3049, 3062, 3067; Tennessee: Polk County, *Kearney* 328; Texas: Ennis, *Smith* in 1897; Oklahoma: Chelsea, *Bush* 1210.

DISTRIBUTION.

Open woods and clearings, Maine to northern Florida, west to Michigan, Nebraska, and Arizona.

Maine: Falmouth, *Chamberlain* 513; Brewer, *Knight* 51; South Berwick, *Parlin* 1181; Southport, *Fernald* 509.

New Hampshire: Langdon, *Fernald* in 1899.

Vermont: Burlington, *Jones* in 1898; Brandon, *Knowlton* in 1882.

Massachusetts; Salem, *Sears* in 1883; Wellesley, *Smith* 735.

Connecticut: Southington, *Andrews* 36, 64, 66; Groton, *Graves* 8; Waterford, *Graves* 156.

Rhode Island: Providence, *Battey* in 1886.

New York: Sylvan Beach, *Maxon* 550; Oneida, *Haberer* in 1900, *House* 1136; Washington County, *Burnham* 14, 23; Gansevoort, *Peck* in 1897; Jamaica, *Bicknell* in 1904; Port Washington, *Bicknell* in 1908.

Ontario: Galt, *Herriot* 53, 61, 93; Windsor, *Macoun* 26334.

New Jersey: Clifton, *Nash* in 1892; South Amboy, *Mackenzie* 2159, 2169; Wildwood, *Chase* 3508; Forked River, *Chase* 3580; Berkeley Heights, *Mackenzie* 2249; Milburn, *Mackenzie* 2137; Cranberry Lake, *Mackenzie* 2197.

Pennsylvania: Refton, *Heller* 4791; Mount Hope, *Heller* 4785; McCalls Ferry, *Rose & Painter* 8133; Easton, *Porter* in 1895.

Ohio: Columbus, *Morris* 48; Painesville, *Werner* in 1885; Berea, *Ashcroft* in 1897; Erie County, *Moseley* in 1902; Big Darby, *Kellerman* 6758; Vinton, *Kellerman* 6890, 6895.

Indiana: Lafayette, *Dorner* 84, 91, 93; Steuben County, *Deam* in 1903; Brazil, *Somes* 230.

Illinois: Downers Grove, *Umbach* 1820; Athens, *Hall* in 1861; Peoria, *Brendel*; Glasford, *Wilcox* 42; Princeville, *V. H. Chase* 81; Williamsfield, *V. H. Chase* 1851; Oregon, *Waite* in 1885; Mahomet, *Gleason* 1033; Makanda, *Gleason* 1028, 1030; Grand Tower, *Gleason* 1031.

Michigan: Port Huron, *Dodge* in 1909; Detroit, *Farwell* 597d, 1382 in part; Grand Beach Springs, *Hill* 83 and 85 in 1908.

Iowa: Ames, *Ball* 42, 157; Lebanon, *Ball & Sample* 35; Decatur County, *Fitzpatrick* 37; Fort Dodge, *Somes* 207.

Nebraska: Pishelville, *Clements* 2983.

Missouri: Courtney, *Bush* 734, 1713, 2996, 3968; Monteer, *Bush*, 746, 759, 760; Sibley, *Bush* 4002, 4803; Dodson, *Bush* 4024; Vale, *Bush* 3915; Pleasant Grove, *Bush* 309; St. Louis, *Eggert* 124, 235, *Hitchcock* 599; Jefferson County, *Eggert* 244, 289.

Kansas: Cherokee County, *Hitchcock* Pl. Kan. 882; Manhattan, *Hitchcock* 2523.

Delaware: Centerville, *Commons* 289, 290, 292, 293, 360, 364; Wilmington, *Commons* 362.

Maryland: Chesapeake Beach, *Chase* 3254; Owings, *Hitchcock* 1621, 1624, 1630.

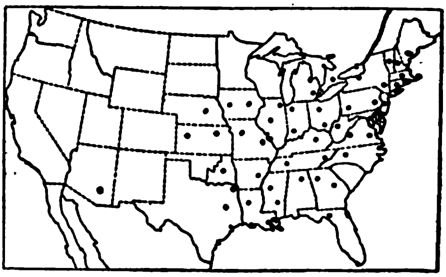


Fig. 224.—Distribution of *P. huachucae silvicola*.

District of Columbia: *Chase* 2400, *Kearney* 22, *Vasey* in 1882, *Ward* in 1881.

Virginia: Alexandria County, *Chase* in Kneucker Gram. Exs. 551, *Hitchcock* 382, 383, *Ward* in 1879; Clifton Forge, *Tidestrom* 48.

West Virginia: Fairmont, *Hitchcock* 136; Morgantown, *Hitchcock* 137.

North Carolina: Chapel Hill, *Ashe*, *Chase* 3065, 3069.

Georgia: Americus, *Tracy* 3889 in part; Augusta, *Kearney* 218 in part; Stone Mountain, *Hitchcock* 1357½.

Florida: Gainesville, *Combs* 751.

Tennessee: Sherwood, *Eggert* 30, 245; Ducktown, *Chambliss* 23; Chester County, *Bain* 197.

Alabama: Sand Mountain, *Biltmore Herb.* 14879b (Biltmore Herb.).

Mississippi: Jackson, *Hitchcock* 1306; Fairport, *Tracy* 3208; Macon, *Tracy* 3223; Starkville, *Tracy* 1751; Agency, *Tracy* 3198.

Arkansas: Prescott, *Bush* 251; Benton County, *Plank* 49.

Louisiana: New Orleans, *Drummond* 454; Shreveport, *Hitchcock* 1255; West Feliciana, *Cocks* 3509.

Texas: Waller County, *Hitchcock* 1214, *Thurow* 22; Gillespie County, *Jermy* 57; without locality, *Reverchon* 1075; Texarkana, *Heller* 4084.

Oklahoma: Chelsea, *Bush* 1210 (Mo. Bot. Gard. Herb.).

Arizona: Tucson, *Toumey* 781.

125. **Panicum tennesseense** Ashe.

Panicum tennesseense Ashe, Journ. Elisha Mitchell Soc. 15: 52. 1898. "Based on No. 7087 Biltmore Herbarium: Cedar glades, La Vergne Co., Tennessee." The type specimen, in the Biltmore Herbarium, is the autumnal form, collected August 7, 1897.

DESCRIPTION.

Vernal form suberect or stiffly spreading, bluish green, often purplish; culms 25 to 60 cm. high, slender, papillose-pilose, or the upper portion glabrous; sheaths spreading-pubescent, rarely nearly glabrous; ligules dense, 4 to 5 mm. long; blades firm with a thin white cartilaginous margin, ascending or suberect, 6 to 9 cm. long, 5 to 8 mm., rarely 10 mm., wide (the upper smaller), often sparsely ciliate at base, the veins usually conspicuous, the upper surface glabrous or with a few long, scattered hairs toward the base, the lower surface appressed-pubescent or nearly glabrous; panicle 4 to 7 cm. long, nearly as wide, rather densely flowered, the lower branches ascending; spikelets 1.6 to 1.7 mm. long, 0.8 to 1 mm. wide, obovate-obtuse, turgid, pubescent; first glume about one-fourth the length of the spikelet; second glume shorter than the sterile lemma, leaving the summit of the fruit exposed at maturity; fruit 1.4 mm. long, 0.8 mm. wide, elliptic, obtuse.

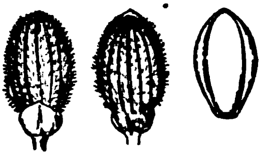


FIG. 225.—*P. tennesseense.* From type specimen.

Autumnal form widely spreading or decumbent, with numerous fascicled, somewhat flabellate, branches, often forming prostrate mats; leaves much reduced, the blades usually ciliate at base; winter rosette formed early.

This species resembles *P. lindheimeri* and *P. huachucae silvicola.* From the former it differs in the larger spikelets, pilose sheaths, and more or less white-margined blades, which are often pubescent beneath, from the latter, in the firmer blades, glabrous above, and from both in the prostrate, mat-like autumnal form. Two vernal specimens from Connecticut, *Graves* 13 and 75 in 1899, are referred here doubtfully because of the looser panicle and rather numerous hairs on the upper surface of the blades. Two specimens with spikelets about 2 mm. long are referred doubtfully to *P. tennesseense,* one from Jefferson County, Missouri (*Eggert* 242) and one from Sapulpa, Oklahoma (*Bush* 711).

DISTRIBUTION.

Open rather moist ground and borders of woods, Maine to Minnesota, and south to Georgia, Mississippi, and Arkansas; also in Colorado and Utah.

MAINE: Dover, *G. B. Fernald* 507; St. Francis, *Fernald* 166a; Fort Fairfield, *Fernald* 166; Cape Elizabeth, *Chase* 3457; Chesterville, *Chase* 3301; Fayette, *Chase* 3399; Hartford, *Parlin* 2017.

NEW HAMPSHIRE: Nashua, *Robinson* 789 (Gray Herb.).

VERMONT: Westmore, *Eggleston* 2181 (Gray Herb.).

MASSACHUSETTS: Framingham, *Smith* 741, 743.

CONNECTICUT: Hartford, *Driggs* 3; Preston, *Graves* 11; Branford, *Bissell* 5611.

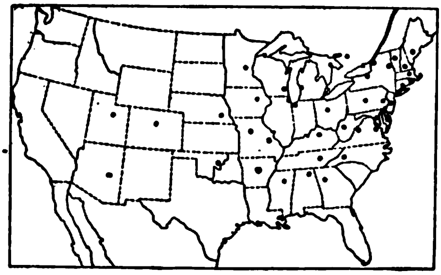


FIG. 226.—Distribution of *P. tennesseense.*

RHODE ISLAND: Providence, *Collins* in 1891 (Gray Herb.).

NEW YORK: Thousand Islands, *Ball* 816, *Robinson & Maxon* 86; Ithaca, *Coville* in 1885; Apalachin, *Fenno* 13, 17; Ausable Chasm, *Jones* in 1898; Jamaica, *Bicknell* in 1905; Valley Stream, *Bicknell,* in 1905; Rosedale, *Bicknell* in 1904; Rockville Center, *Bicknell* in 1902; Edgemere, *Bicknell* in 1902; Hewlett, *Bicknell* in 1905.

ONTARIO: Algonquin Park, *Macoun* 72965.

NEW JERSEY: Wildwood, *Chase* 3503; South Amboy, *Mackenzie* 1459; Netcong, *Mackenzie* 2076.

PENNSYLVANIA: Easton, *Porter* in 1892, 1895, and 1898; Lancaster County, *Heller* 4774, 4778; Germantown, *Stone* 8, 13; Safe Harbor, *Small* in 1889; Sayre, *Barbour* in Kneucker Gram. Exs. 485 [a]; Rockdale, *Pretz* 2022.

OHIO: Berea, *Ashcroft* in 1897.

INDIANA: Clark Junction, *Bebb* 2881; Indiana Harbor, *Chase* 1904; Anderson, *Deam* 2065.

ILLINOIS: Zion City, *Hill* 141 in 1905.

MICHIGAN: Grand Beach Springs, *Hill* 86 in 1908; Petoskey, *Hill* 162 in 1878 (Hitchcock Herb.).

WISCONSIN: Racine, *Wadmond* 3424b; Webster, *Cheney* 3409; Stevens Point, *Cheney* 3471.

MINNESOTA: Milaca, *Sheldon* 2743.

IOWA: Fort Dodge, *Somes* 153.

NEBRASKA: Minden, *Hapeman* in 1907.

MISSOURI: Williamsville, *Eggert* 243; Swan, *Bush* 4532; Monteer, *Bush* 4684; Vale, *Bush* 3914.

DELAWARE: Wilmington, *Chase* 3617, *Commons* 365.

MARYLAND: Chesapeake Beach, *Chase* 3260; Potomac Valley a few miles above Washington, *Chase* 2463, 2849, 2874, 3274, 3275, 5424, 5425, *Hitchcock* 138, *Kearney* in 1897.

DISTRICT OF COLUMBIA: *Ball* in 1902, *Kearney* 29a, *Hitchcock* 505, *Pollard* 523.

VIRGINIA: Fairfax County, *Hitchcock* 139; Clifton Forge, *Tidestrom* 5.

WEST VIRGINIA: Quinnemont, *Pollard & Maxon* 22.

NORTH CAROLINA: Asheville, *Boynton* 2; Hendersonville, *Biltmore Herb.* 5184b; Biltmore, *Biltmore Herb.* 698b; Macon County, *Boynton* 9.

GEORGIA: Stone Mountain, *Hitchcock* 1358.

KENTUCKY: Lexington, *Peter* in 1833 (Ky. State Univ. Herb.).

TENNESSEE: Knox County, *Kearney* in 1893.

ALABAMA: Pisgah, *Chase* 4477; Scottsboro, *Chase* 4499.

MISSISSIPPI: Panola County, *Eggert* 296.

ARKANSAS: Texarkana, *Heller* 4160.

OKLAHOMA: Sapulpa, *Bush* 712.

COLORADO: South Boulder, *Jones* 619.

UTAH: Springdale, *Jones* 6069.

ARIZONA: Santa Catalina Mountains, *Thornber* 308 (Jones Herb.).

126. Panicum lanuginosum Ell.

Panicum lanuginosum Ell. Bot. S. C. & Ga. 1: 123. 1816. "Grows in Georgia. Sent to me by Dr. Baldwin." The type, in the Elliott Herbarium, consists of a single culm lacking the base, with four leaves and primary panicle included at base; the spikelets, which are immature, are 1.8 mm. long, and 0.8 mm. wide. The accompanying label reads: "Panicum Lanuginosum. Hab. Georg: Dr. Baldwin."

Panicum dichotomum lanuginosum Wood, Class-book ed. 3. 786. 1861. Presumably based on *P. lanuginosum* Ell., no synonymy nor locality being cited.

Panicum orangensis[*e*] Ashe, Journ. Elisha Mitchell Soc. **15**: 113. 1899. "I have collected the plant at two stations, both in Orange County, N. C." "Collected in June, 1898." No specimen bearing this name could be found in Ashe's herbarium. There is, however, a cover containing specimens collected at Chapel Hill, Orange County, North Carolina, June 29, 1898. On this cover are notes which indicate that Ashe considered the species allied to *P. lanuginosum*. The description of *P. orangense* agrees with these specimens except that the spikelets are said to be glabrous. But this statement is probably an error of observation or of description, since the author adds, "Related to *Panicum lanuginosum* Ell., and separated from it by having a longer, softer pubescence and its leaves not being ciliate." Since the spikelets of *P. lanuginosum* as described by Ashe (*P. huachucae silvicola*) are pubescent, this difference would probably have been noted in the contrast of the two species. A portion of the specimen mentioned above has been deposited in the National Herbarium and has been chosen as the type of *P. orangense* Ashe. It is the early autumnal form.

---

[a] This number in Mo. Bot. Gard. Herb. is *P. huachucae silvicola*.

Panicum ciliosum Nash, Bull. Torrey Club **26**: 568. 1899. "Type collected by S. M. Tracy, at Biloxi, Mississippi, September 1, 1898, no. 4580." The type, in Nash's herbarium, is the early autumnal form with a simple culm and primary panicle attached, and without the winter rosette. The specimen of *Tracy* 4580 in the National Herbarium has a winter rosette, the blades 4 to 6 cm. long. In the description the ligule is said to be "about 0.5 mm. long" but in the type it measures 3 mm. long.

DESCRIPTION.

Vernal form grayish olive green, velvety to the touch; culms tufted, usually in large clumps, 40 to 70 cm. long, slender, lax, spreading, densely villous with fine, soft hairs arising from small papillæ; nodes villous, often a glabrous ring below; sheaths shorter than the internodes, soft-villous like the culm, or the upper puberulent only, ciliate on the margin; ligules 3 to 4 mm. long; blades thickish but not stiff, ascending or spreading, somewhat incurved or spoon-shaped, 5 to 10 cm. long, 5 to 10 mm. wide (the uppermost much smaller), acuminate, narrowed toward the rounded base, the margins sometimes papillose-ciliate, the upper surface clothed with short, soft hairs with long soft hairs intermixed, especially toward the margins and base, the lower surface densely velvety-pubescent; panicles exserted, 6 to 12 cm. long, about as wide, loosely flowered, the axis pubescent, the slender flexuous branches spreading or ascending, the lower often drooping; spikelets 1.8 to 1.9 mm. long, 1 mm. wide, obovate-elliptic, subobtuse, pubescent; first glume one-third the length of the spikelet, obtuse or obscurely pointed; second glume and sterile lemma equal, slightly shorter than the fruit at maturity; fruit 1.6 mm. long, 0.9 mm. wide, elliptic, subacute.

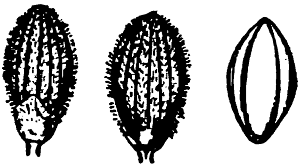


FIG. 227.—*P. lanuginosum*. From type specimen.

Autumnal form widely spreading or decumbent, freely branching from the middle nodes, the branches repeatedly branching and much exceeding the internodes, the ultimate branchlets forming flabellate fascicles; leaves and panicles much reduced, the flat blades almost always ciliate and exceeding the panicles; winter rosette not appearing until late, the blades 4 to 5 cm. long, usually ciliate, otherwise minutely velvety or nearly glabrous.

The plant bears some resemblance in color and pubescence to *P. scoparium*, but is smaller and much more slender. The vernal form also resembles *P. huachucae silvicola* but is larger and more velvety and is gray-green in color rather than bright green.

It may be that the form described by Nash as *P. ciliosum* is a distinct species. It differs in having blades glabrous on the upper surface or with a few long hairs only, but not velvety, and winter rosettes of large blades. The typical form has been found only in Tracy's garden, at Biloxi, in cultivated soil. Other Biloxi specimens lack the large rosettes, probably because not growing in cultivated soil. The following specimens, because of the lack of velvety pubescence on the upper surface of the blades, may be referred to this form: MISSISSIPPI: Biloxi, *Chase* 4331, *Hitchcock* 1079, *Tracy* 1735, 2867, 3620, 3622, 3645, 4580, 4605; Ocean Springs, *Tracy* 6469. LOUISIANA: Lake Charles, *Hitchcock* 1152, *Chase* 4401.

89.

DISTRIBUTION.

Moist sandy woods, mostly near the coast, New Jersey to Florida and Texas.

New Jersey: Wildwood, *Chase* 3488, 3505, *Heritage* 6.

Delaware: Milton, *Commons* 342; Lewes, *Hitchcock* 387.

Maryland: Between Chesapeake Beach and Chesapeake Junction, *Hitchcock* 1613½, 1638.

Virginia: Dismal Swamp, *Chase* 3663, *Tyler* in 1905; Norfolk County, *Kearney* 1559; Virginia Beach, *Kearney* 2043; Cape Henry, *Chase* 5426.

North Carolina: Chapel Hill, *Ashe* in 1898, *Chase* 3068, 3076; Raleigh, *Chase* 3086; Wilsons Mills, *Chase* 3107; Lake Mattamuskeet, *Chase* 3208; Scranton, *Chase* 3201½; Roanoke Island, *Chase* 3221; Wilmington, *Chase* 4584, *Hitchcock* 388, 1468.

South Carolina: Orangeburg, *Hitchcock* 389, 390, 1395; Isle of Palms, *Hitchcock* 386, *Chase* 4532; St. Helena Island, *Cuthbert* in 1899.

Georgia: Stone Mountain, *J. D. Smith* 48 in 1883; Millen, *Curtiss* 6827; Coney, *Harper* 1399; Burke County, *Harper* 765; Thomson, *Bartlett* 1443, 1460.

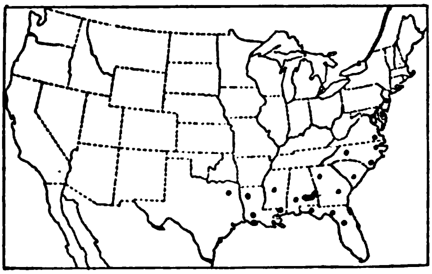


Fig. 228.—Distribution of *P. lanuginosum*.

Florida: Lake City, *Bitting* 8, 13, *Chase* 4277, 4292, *Combs* 174, 194, *Hitchcock* 1032; Milton, *Chase* 4305, *Curtiss* R; Madison County, *Combs* 215, 294; Gainesville, *Chase* 4242, *Combs* 732; Eustis, *Nash* 375; Orange Bend, *Chase* 4113; St. Andrews, *Tracy* 9138.

Alabama: Fort Morgan, *Tracy* 8399.

Mississippi: Biloxi, *Chase* 4331, *Hitchcock* 1079, *Tracy* 1735, 2867, 3620, 3622, 3645, 4580, 4605; Ocean Springs, *Tracy* 6469; Cat Island, *Tracy & Lloyd* 441; Horn Island, *Tracy* 2856; Jackson, *Hitchcock* 1297; Saratoga, *Tracy* 8416.

Louisiana: Shreveport, *Hitchcock* 1238, 1258; Cameron, *Cocks* 2191; Calcasieu, *Cocks* 2193; Breton Island, *Tracy & Lloyd* 467; Alexandria, *Ball* 544; Lake Charles, *Chase* 4401, *Hitchcock* 1129, 1135, 1147, 1152.

Texas: Silver Lake, *Reverchon* 1884.

127. **Panicum acuminatum** Swartz.

Panicum acuminatum Swartz, Prodr. Veg. Ind. Occ. 23. 1788. "*Jamaica.*" In his Flora[a] Swartz states concerning this species, "Incolit campos arenosos *Jamaicae* montosae." The type specimen, in the Swartz Herbarium, consists of three plants of the prostrate autumnal form.

Panicum dichotomum acuminatum Swartz; Griseb. Fl. Brit. W. Ind. 553. 1864. Based on *P. acuminatum* Swartz. In the Grisebach Herbarium is a plant of this species labeled by Grisebach, collected in Jamaica by March.

Panicum comophyllum Nash, Bull. Torrey Club **30**: 380. 1903. "Type collected in rich soil at Santurce [Porto Rico], January 9, 1899, by Heller, no. 12." The type, in the herbarium of the New York Botanical Garden, is a specimen in the early branching state.

---

[a] Fl. Ind. Occ. **1**: 152. 1797.

DESCRIPTION.

Vernal culms leafy, ascending from a geniculate base, 20 to 70 cm. high, densely villous with soft, spreading hairs, rarely glabrate above, the nodes more or less bearded; sheaths velvety papillose villous or the upper glabrate; ligule 2 to 3 mm. long; blades ascending or spreading, 4 to 8 cm. long, 6 to 13 mm. wide, lanceolate, slightly cordate at base, sharply acuminate, usually ciliate, the lower surface velvety papillose puberulent, the upper surface from appressed papillose pubescent to long-villous, or nearly glabrous except for long hairs near the base or margin; panicles 3 to 10 cm. long, about as wide, the axis usually villous, the branches flexuous, the lower spreading or even reflexed; spikelets 1.8 to 1.9 mm. long, 0.9 mm. wide, obovate, turgid, abruptly subacute, pilose; first glume about one-third the length of the spikelet, subacute; second glume and sterile lemma barely equaling the fruit at maturity; fruit 1.3 to 1.4 mm. long, 0.9 mm. wide, elliptic, abruptly acute.

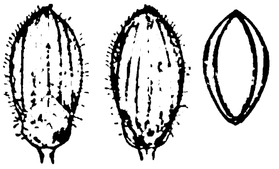


FIG. 229.—*P. acuminatum.* From type specimen.

Autumnal form appearing early, the primary culms branching at all but the uppermost nodes before the maturity of the primary panicles, these branches often exceeding the culm, more or less zigzag, repeatedly branching, the ultimate branchlets in dense, short, flabellate fascicles, the reduced blades flat or involute-pointed, the long hairs on the margins and upper surface usually conspicuous.

DISTRIBUTION.

Sandy pine woods, the West Indies; also in the United States of Colombia.

CUBA: Herradura, *Hitchcock* 140, *Tracy* 9078; Pinar del Rio, *Palmer & Riley* 447; *Wright* 3874; Isle of Pines, *Curtiss* 307, 328, *Palmer & Riley* 989, 1083, *A. A. Taylor* in 1901.

JAMAICA: *Swartz, Hart* 736.

SANTO DOMINGO: *Poiteau* (Paris Herb.).

PORTO RICO: Santurce, *Heller* in 1903, Maricao, *Sintenis* 355; Fajardo, *Sintenis* 1224 in part; Lares, *Sintenis* 5908.

COLOMBIA: Near Jamundí, *Pittier* 932, 982a.

128. Panicum auburne Ashe.

Panicum auburne Ashe, N. C. Agr. Exp. Sta. Bull. **175:** 115. 1900. "Auburn, Ala., May 7, 1898. Collected by Professors F. S. Earle and C. Baker, of the Alabama Biological Survey, at Auburn, Ala., May 7, 1898. No. 1527." The type specimen, in Ashe's herbarium, consists of several immature vernal culms with portions of the dead autumnal culms of the preceding year attached.

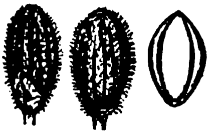


FIG. 230.—*P. auburne.* From type specimen.

DESCRIPTION.

Vernal form grayish velvety-villous throughout; culms tufted, 20 to 50 cm. high, geniculate at base, widely spreading, soon becoming branched and decumbent, rather slender, densely papillose silky villous below, velvety with copious silky hairs intermixed above; sheaths usually about half the length of the internodes, villous like the culms; ligules 3 to 4 mm. long; blades rather thin, ascending, 3 to 7 cm. long, 3 to 5 mm. wide, acuminate, slightly narrowed toward the base, the upper surface velvety with copious long, silky hairs intermixed, especially toward the base, the lower surface silky-villous or velvety, the nerves somewhat conspicuous; panicles short-exserted, 3 to 5 cm. long, about as wide, the axis velvety, with long, silky hairs intermixed, the flexuous branches ascending or spreading; spikelets 1.3 to 1.4 mm. long, 0.8 to 0.9 mm. wide, obovate, very turgid, densely papillose-pubescent; first glume one-third to half the length of the spikelet, acute; second glume and sterile lemma equal and covering the fruit at maturity; fruit 1.1 to 1.2 mm. long, 0.8 mm. wide, obovate-elliptic, minutely pointed.

Autumnal form early becoming diffusely branched at all the nodes, prostrate-spreading, forming large mats, the branches curved upward at the ends; earlier branches longer than the primary internodes, the ultimate branchlets in short fascicles with involute-pointed blades 1 to 2 cm. long, the numerous turgid little spikelets clustered at their bases; winter rosette appearing rather late, the lanceolate blades silky-villous like those of the primary culm.

The vernal form resembles that of *P. lanuginosum* but is smaller, more slender and more silky-villous, with smaller, more turgid spikelets; the prostrate autumnal form with upturned branch tips is characteristic.

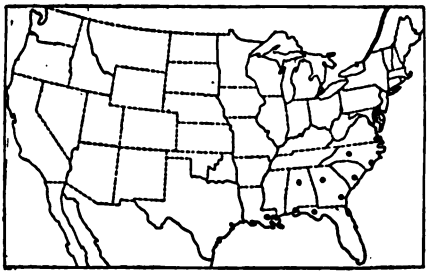


FIG. 231.—Distribution of *P. auburne.*

DISTRIBUTION.

Sandy pine and oak woods of the Coastal Plain from Virginia to Florida, and west to Louisiana.

VIRGINIA: Cape Henry, *Chase* 2341; Virginia Beach, *Mackenzie* 1733, *Williams* 3097, 3105; Dismal Swamp, *Chase* 3680.

NORTH CAROLINA: Wilmington, *Chase* 3132, 4579, *Hitchcock* 1482; Cumberland County, *Stevens* 6425.

SOUTH CAROLINA: Orangeburg, *Hitchcock* 10.

GEORGIA: Bainbridge, *Curtiss* 6811; Thomson, *Bartlett* 1172.

FLORIDA: De Funiak Springs, *Combs* 440.

ALABAMA: Gateswood, *Tracy* 8430 in part; Auburn, *Earle & Baker* 1527.

LOUISIANA: Shreveport, *Cocks* 3506.

129. **Panicum thurowii** Scribn. & Smith.

Panicum thurowii Scribn. & Smith, U. S. Dept. Agr. Div. Agrost. Circ. **16**: 5. 1899. "Named for Mr. F. W. Thurow, by whom it was collected in Waller County, Texas, June 5, 1898, No. 9." The type, in the National Herbarium, consists of one simple culm and one beginning to branch, about 40 cm. high, with short-exserted, nearly mature panicles.

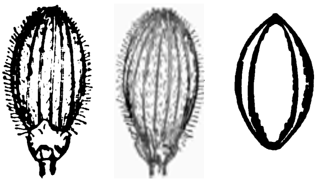


FIG. 232.—*P. thurowii.* From type specimen.

DESCRIPTION.

Vernal form bluish green, but drying olive; culms tufted, 35 to 70 cm. high, erect or ascending, villous, the nodes bearded with spreading hairs, usually a glabrous ring below; sheaths long, the lower often overlapping, the upper shorter than the internodes, sparsely or rather densely villous; ligules 4 mm. long; blades rather stiff, ascending or spreading, 7 to 12 cm. long, or the uppermost only 2 to 3 cm. long, 6 to 10 mm.

wide, acuminate, often somewhat involute toward the apex, narrowed toward the rounded base, the upper surface sparingly pilose toward the base and margins, the lower surface densely velvety-villous; panicles short-exserted, 7 to 11 cm. long, nearly as wide, rather densely flowered, the axis sparingly villous near the base, the branches spreading; spikelets 2 mm. long, 1 mm. wide, elliptic, somewhat obovate at maturity, obtuse, pubescent with soft, spreading hairs; first glume one-fifth the length of the spikelet, obtuse or obscurely pointed; second glume and sterile lemma equal, scarcely equaling the fruit at maturity, obtuse or slightly pointed; fruit 1.7 mm. long, 1 mm. wide, elliptic, subacute.

Autumnal form erect, after the maturity of the primary panicle bearing at the middle nodes a few appressed or ascending fascicled branches scarcely longer than the primary internodes, the reduced blades flat or somewhat involute at the tips, ciliate.

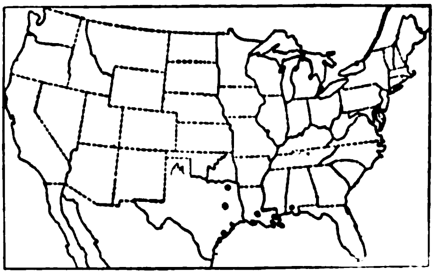


FIG. 233.—Distribution of *P. thurowii.*

DISTRIBUTION.

Prairies and dry open woods, Alabama to Texas.

ALABAMA: In the vicinity of Mobile, *Mohr* in 1895 and 1897.

LOUISIANA: Without locality, *Hale* (Gray Herb.).

TEXAS: Waller County, *Hitchcock* 1171, 1195, 1226, *Thurow* 9, 11; Montgomery County, *Thurow* in 1905; Hockley, *Thurow* in 1893 and 1906; Swan, *Reverchon* 4163; Houston, *Ravenel* in 1869; Del Rio, *Plank* 41; without locality, *Nealley* in 1884 and 1887.

130. **Panicum olivaceum** sp. nov.

DESCRIPTION.

Vernal culms olive green, erect or somewhat spreading at base, 20 to 40 cm. high, velvety-villous with short hairs, the nodes bearded; sheaths villous like the culm, mostly shorter than the internodes; ligules 3 to 4 mm. long; blades rather stiffly erect or ascending or some of the lower spreading, 4 to 7 cm. long, 5 to 8 mm. wide (the uppermost erect, 1 to 3 cm. long), puberulent on both surfaces, also more or less short-villous above, and often with longer villous hairs toward the base; panicles 3 to 7 cm. long, ovate, the flexuous branches spreading, short spikelet-bearing branchlets in the axils; spikelets 1.9 to 2 mm. long, 1 mm. wide, obovate, subacute, papillose-pilose; first glume one-fourth to one-third the length of the spikelet, usually pointed; second glume scarcely equaling the fruit and sterile lemma; fruit 1.6 mm. long, 1 mm. wide, subacute.

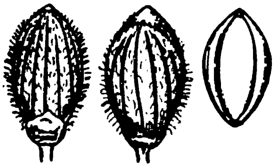


FIG. 234.—*P. olivaceum.* From type specimen.

Autumnal form upright or becoming decumbent-spreading, freely branching from the lower and middle nodes before the maturity of the primary panicle, the reduced branches appressed, or in the decumbent culms curved upward; blades reduced, flat, 1 to 2 cm. long, 2 to 4 mm. wide, usually conspicuously ciliate.

Type U. S. National Herbarium no. 823209, collected February, 1888, at Coban, Department of Alta Vera Paz, Guatemala, altitude 1,400 meters, by H. von Tuerckheim (no. 428). It consists of four plants with mature primary panicles and freely branching culms.

This species is closely allied to *P. acuminatum*, differing in the olivaceous color, the less velvety pubescence, the stiff, appressed blades, and the larger spikelets. The autumnal form is bushy, the branches evenly distributed, not gathered into distinct fascicles as in *P. acuminatum*.

DISTRIBUTION.

Gravelly banks and cultivated fields, Mexico to Costa Rica; also in Venezuela.

MEXICO: Jalapa, *Pringle* 8339 in part[a] (Nat. Herb. no. 823271); Orizaba, *Bourgeau* 2383 in part, *Botteri* 99, 101 (both in Brit. Mus. Herb.), 1987 (Paris Herb.); Minatitlan, *J. G. Smith* 571 (Hitchcock Herb.).

GUATEMALA: Coban, *Tuerckheim* 428 in 1879, 428 in 1888; *Seler* 3235 (Berlin Herb.).

COSTA RICA: San Pedro de la Calabaza, *Tonduz* 10745 in part (Nat. Herb. no. 385918); Tablazo, *Tonduz* 7944.

VENEZUELA: Tovar, *Fendler* 1638β.

COLOMBIA: Popayán, *Lehmann* 974 (Gray Herb.).

131. **Panicum praecocius** Hitchc. & Chase.

Panicum praecocius Hitchc. & Chase, Rhodora **8**: 206. 1906. "Type *V. H. Chase* 649; dry bank, near Wady Petra, Stark County, Illinois, June 30, 1900, collected by Virginius H. Chase." The type, in the National Herbarium, is a clump of branching culms, with mature secondary panicles, the primary ones being devoid of spikelets.

DESCRIPTION.

Vernal culms tufted, 15 to 25 cm. high, early branching and elongating, sometimes to 30 or 45 cm., at first erect, soon becoming geniculate and spreading, very slender, wiry, abundantly papillose-pilose with weak spreading hairs 3 to 4 mm. long; sheaths, even the lowest, much shorter than the very long internodes, those of the branches usually but 1 to 2 cm. long, pilose like the culm, more prominently papillose; ligules 3 to 4 mm. long; blades rather firm, erect or ascending, 5 to 9 cm. long, 4 to 6 mm. wide, the margins parallel about two-thirds their length, acuminate, long-pilose on both surfaces, the hairs of the upper surface 4 to 5 mm. long, erect from the plane of the blade, the under surface prominently papillose; panicles at first usually overtopped by the upper leaf, but at or past maturity exserted, 4 to 6 cm. long, about as wide, loosely flowered, the axis pilose, the branches flexuous, spreading or ascending; spikelets 1.8 to 1.9 mm. long, 1 mm. wide, obovate, turgid, obtuse, pilose; first glume one-third to half the length of the spikelet, triangular; second glume and sterile lemma subequal, the glume slightly shorter than the fruit at maturity; fruit 1.6 mm. long, 1 mm. wide, broad-elliptic.

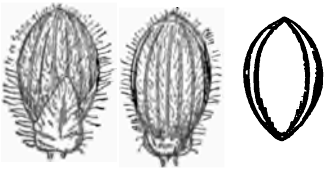


FIG. 235.—*P. praecocius*. From type specimen.

Autumnal form ascending from a geniculate base, or in prairie sod erect, forming close bunches 10 to 20 cm. high, the upper portion of the primary culms early deciduous, the branches appressed, the scarcely reduced blades erect or narrowly ascending, much exceeding the reduced panicles; winter rosette appearing late, the blades 2 to 3 cm. long, long-pilose.

This species scarcely has a simple state, the branches appearing often before the first panicle is expanded.

---

[a] See footnote under *P. multirameum*, page 185.

DISTRIBUTION.

Dry prairies and clearings, Michigan and Indiana to Minnesota and Texas.

INDIANA: Hessville, *Hill* 49 in 1909.

ILLINOIS: Joliet, *Hill* 37 in 1907; Wady Petra, *V. H. Chase* 472, 649, 1212, 1214, 1218, 1492, 1515; Marshall County, *V. H. Chase* 1791; Williamsfield, *V. H. Chase* 1850; Havana, *Gleason* 1034.

MICHIGAN: Port Huron, *Dodge* in 1909.

WISCONSIN: Lauderdale, *Bebb* 2057.

MINNESOTA: Itaska Lake, *Sandberg* 1016.

IOWA: Fort Dodge, *Somes* 25; Armstrong, *Cratty* in 1890; Iowa City, *Somes* 246.

NEBRASKA: Broken Bow, *Webber* 4.

MISSOURI: Monteer, *Bush* 748, 749 in part; McDonald County, *Bush* 87; Howell County, *Bush* 54; Lees Summit, *Bush* 3090, 3935.

KANSAS: Manhattan, *Carleton* in 1892, *Hitchcock* 2500, 2524, 3853, *Kellerman* 20; Belleville, *Hitchcock* 3544.

TEXAS: Waller County, *Thurow* 5, and in 1906; Weatherford, *Tracy* 7943 in part.

OKLAHOMA: Stillwater, *Hitchcock* in 1903 (Hitchcock Herb.).

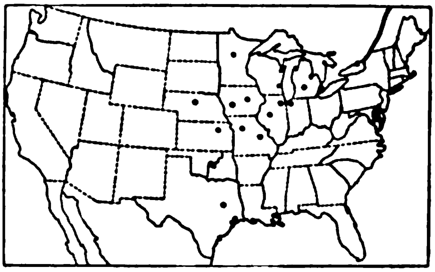


FIG. 236.—Distribution of *P. praecocius*.

132. Panicum subvillosum Ashe.

Panicum subvillosum Ashe, Elisha Mitchell Soc. **16**: 86. 1900. "Collected by the writer at Carlton, Minnesota, in August, in the simple state. Type material preserved in my herbarium." The type specimen, in Ashe's herbarium, consists of three tufts of several culms each, 15 to 30 cm. high, with leaves clustered at the base and long-exserted mature panicles.

Panicum unciphyllum forma *pilosum* Scribn. & Merr. Rhodora **3**: 124. 1901, not *Panicum pilosum* Swartz, 1788. "Dry woods, Orono, Maine, 501 *M. L. Fernald*, July 7, 1891." The type, in the National Herbarium, consists of a tuft of nine slender culms 15 to 35 cm. high, with long-exserted nearly mature panicles.

DESCRIPTION:

Vernal culms tufted, 10 to 45 cm. high, slender, ascending or spreading, pilose with ascending hairs, usually faintly papillose, the lower internodes short, thus making the plant more leafy below, the nodes short-bearded; sheaths sparsely pilose with ascending hairs, the lower overlapping, the upper much shorter than the long internodes; ligules 3 mm. long; blades rather firm, ascending, 4 to 6 cm. long, 4 to 6 mm. wide, rarely wider, acuminate, slightly narrowed toward the base, both surfaces pilose, the hairs on the upper surface 3 to 5 mm. long, shorter on the lower; panicles long-exserted, ovate to oblong in outline, 3 to 5 cm. long, two-thirds to three-fourths as wide, rather densely flowered, the axis pubescent or toward the base pilose, the lower branches ascending; spikelets 1.8 to 1.9 mm. long, 0.9 mm. wide, elliptic, obtuse, pubescent; first glume nearly or quite half the length of the spikelet, acuminate;

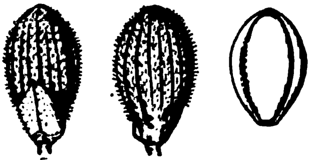


FIG. 237.—*P. subvillosum*. From type specimen.

second glume scarcely equaling the fruit at maturity; fruit 1.5 mm. long, 0.8 mm. wide, elliptic, obtuse.

Autumnal form widely spreading, sparingly branching from the lower nodes, the leaves and panicles not greatly reduced, the panicles overtopped by the leaves, these less copiously pilose.

This species may be distinguished from *P. implicatum* and *P. meridionale* by the larger spikelets, the long-exserted panicles, the aggregation of the leaves toward the base of the vernal culms, and the sparingly branched, almost prostrate autumnal form. In its most characteristic form the panicle branches are strictly ascending at maturity and spikelet-bearing near the ends only, thus forming a compact panicle with a long naked base.

DISTRIBUTION.

Dry woods and sandy ground, Nova Scotia to Connecticut, and west to Minnesota and northern Indiana.

Nova Scotia: Bedford, *Macoun* 29368.
New Brunswick: Kent County, *Fowler* in 1875.
Quebec: Montmorenci Falls, *Macoun* 69205 (Gray Herb.).
Maine: Chesterville, *Chase* 3278, 3320; Fayette, *Chase* 3391; Cape Elizabeth, *Chase* 3453; Stacyville, *Knight* 56; North Yarmouth, *Chamberlain* 837; Hartford, *Parlin* 2016; Cumberland, *Chamberlain* 787, *Ricker* 1277½; Orono, *Fernald* 501; Ogunquit, *Parlin* 1581; Canton, *Parlin* 2001.
New Hampshire: Wiers, *Carter* in 1902 (Hitchcock Herb.).
Vermont: Rutland, *Eggleston* 1758.
Massachusetts: Ipswich, *Oakes* (Gray Herb.).
Connecticut: Tolland, *Bissell* 12001.
New York: Verona, *Haberer* in 1900; Hempstead, *Bicknell* in 1903; Valley Stream, *Bicknell* in 1905; Rosedale, *Bicknell* in 1904.
Ontario: Galt, *Herriot* in 1898; Algonquin Park, *Macoun* 22023.
Indiana: Clark Junction, *Bebb* 2832, 2833½.
Michigan: Keweenaw County, *Farwell* 642.
Wisconsin: Conover, *Cheney* 678; Tomahawk Lake, *Cheney* 1082.
Minnesota: Carlton, *Ashe* in 1899.

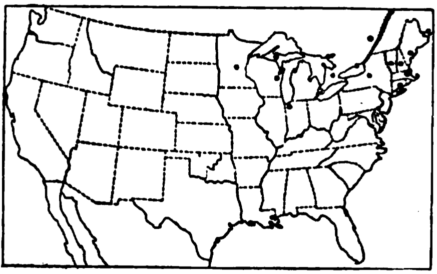


Fig. 238.—Distribution of *P. subvillosum*.

133. Panicum occidentale Scribn.

Panicum occidentale Scribn. Rep. Mo. Bot. Gard. **10**:48. 1899. Based on "*P. pubescens* [Lam. misapplied by] Presl, not Lam. nor Michx." While the type must be the specimen in Presl's herbarium, Scribner's conclusions were based on a duplicate in the Bernhardi Herbarium at the Missouri Botanical Garden, labeled in Presl's handwriting "*Panicum pubescens* Michx." The type specimen collected by Haenke, which is the basis of Presl's[a] identification, is in the Bohemian Museum at Prague and consists of three culms with mature primary panicles, and with secondary panicles on short branches from the lower nodes, that is, vernal culms showing the commencement of the autumnal form. One label reads "*Panicum pubescens* Michx.;" another bears the locality "Archipel," which refers to the vicinity of Nootka Sound, Vancouver Island, the locality as published by Presl, "Hab. in Nootka-Sund."

---

[a] Rel. Haenk. 1:306. 1830.

DESCRIPTION.

Vernal form tufted, yellowish green; culms slender, 15 to 40 cm. high, rarely higher, spreading, the lower internodes usually short, as in *P. subvillosum*, producing a leafy base as in that species, sparsely papillose-pubescent, the upper more or less elongated, glabrate, the nodes pubescent; sheaths rather sparsely papillose-pubescent, rarely almost glabrous; ligules 3 to 4 mm. long; blades firm, erect or ascending, 4 to 8 cm. long, 5 to 7 mm. wide, acuminate, rounded at the base, the upper surface with a few long hairs toward the base and margin, otherwise glabrous, the under surface appressed-pubescent; panicles long-exserted, 4 to 7 cm. long, about two-thirds as wide, rather loosely flowered, the flexuous branches ascending or spreading; spikelets 1.8 mm. long, 1 mm. wide, elliptic-obovate, subacute, pubescent; first glume one-fourth the length of the spikelet or less, obtuse or pointed; second glume and sterile lemma as long as the fruit at maturity; fruit 1.6 mm. long, 0.9 mm. wide, elliptic, subacute.

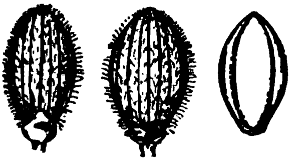


FIG. 239.—*P. occidentale*. From type specimen at Prague.

Autumnal form branching from the lower nodes, forming a spreading bunch or tussock 10 to 15 cm. high; leaves and panicles reduced; winter rosette appearing late, the blades narrowly lanceolate, glabrous or pilose at base.

This species is less pubescent than any other in this group.

DISTRIBUTION.

Peat bogs and moist sandy ground, British Columbia and Idaho to southern California.

IDAHO: Lake Coeur d'Alene, *Sandberg*, *Heller & MacDougal* in 1892; Priest Lake, *Piper* 3778.

WASHINGTON: Montesano, *Heller* 3978; Chelan County, *Whited* in 1901; Lake Chelan, *Elmer* 489, *Lake & Hull* 118; Bingen, *Suksdorf* 5162, 5174; Granville, *Conard* 378, Yakima County, *Cotton* 736, 792.

BRITISH COLUMBIA: Lake Osoyoos, *Macoun* 77229; Vancouver Island, *Canby* 352 (Gray Herb.).

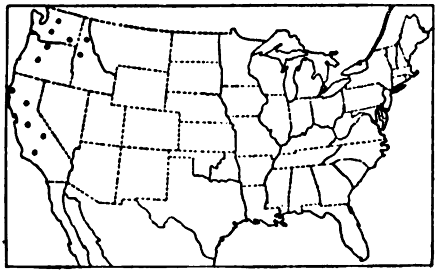


FIG. 240.—Distribution of *P. occidentale*.

OREGON: Mount Scott, *Sheldon* in 1902; Columbia River, *Sheldon* 8706.

CALIFORNIA: Crescent City, *Davy* 5971; Mendocino, *Davy* 6092, *McMurphy*, 425; New York Falls, *Hansen* 1723; Yosemite Valley, *Brewer* 1646; Merced River, *Torrey* 587; San Diego, *Orcutt* 540; without locality, *Bridges* 366, *Hartweg* 2024.

134. **Panicum pacificum** sp. nov.

DESCRIPTION.

Vernal form light green; culms tufted, 25 to 50 cm. high, ascending or spreading, leafy (culm leaves 5 or 6), papillose-pilose with spreading hairs, the nodes shortly spreading-pilose; sheaths papillose-pilose, the papillæ prominent; ligules 3 to 4 mm. long; blades erect or ascending 5 to 10 cm. long, 5 to 8 mm. wide, acuminate, narrowed toward the rounded base, the upper surface papillose-pilose, typically with short hairs intermixed, but these often wanting and the long hairs sometimes sparse, the lower surface appressed papillose pubescent; panicles usually rather short-exserted, 5 to 10 cm. long, about three-fourths as wide, the flexuous branches ascending; spikelets 1.8 to 2 mm. long, 1 to 1.1 mm. wide, obovate, obtuse, turgid, papillose-pubescent; first glume one-fourth to one-third the length of the spikelet, truncate; second glume and sterile lemma equaling the fruit at maturity; fruit 1.6 mm. long, 1 mm. wide, elliptic-obovate, obtuse or obscurely pointed.

Autumnal form prostrate-spreading, repeatedly branching from the middle and upper nodes after the maturity of the primary panicle, the reduced blades less pilose than the vernal ones, exceeding the reduced panicles; winter rosette appearing rather early, blades only sparsely pubescent.

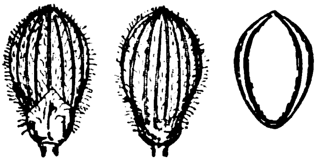


FIG. 241.—*P. pacificum*. From type specimen.

Type U. S. National Herbarium no. 592751, collected August 3, 1908, in moist places in woods, one-fourth mile east of hotel, Castle Crag, Shasta County, California, by A. S. Hitchcock (no. 3070). The specimen is a tuft of several branching culms.

This species is distinguished from *P. occidentale* by the more copious pubescence throughout, the more leafy culms, and in the autumnal form by the branching habit; from *P. thermale* by the taller, late-branching culms, longer, narrower blades, and pilose, not velvety, pubescence, also by the branching habit. It most nearly resembles *P. huachucae*, laxer forms resembling its subspecies *silvicola*, and like these it is variable in amount of pubescence. The spreading habit and larger spikelets, together with a distinct range, make it impossible to include this western form under *P. huachucae*.

DISTRIBUTION.

Sandy shores and slopes, and moist crevices in rocks, ascending to 1,650 meters, British Columbia and Idaho to southern California.

IDAHO: Salmon River, *Henderson* 3569; Lake Coeur d'Alene, *Hitchcock* 2171, 2190, *Leiberg* 1312; Lochsa River, *Piper* 4056; Sawtooth National Forest, *Tidestrom* 2636.

WASHINGTON: Falcon Valley, *Suksdorf* 124; Wenatchee, *Whited* 1249; Kittitas County, *Sandberg & Leiberg* 425; Spokane, *Kreager* 160; Lake Calispell, *Kreager* 325; Lake Chelan, *Gorman* 635; Klickitat County, *Suksdorf* 6292.

BRITISH COLUMBIA: Vancouver Island, *Canby* 252, *Rosendahl & Brand* 107, *Waldron* 1921.

OREGON: Grants Pass, *Piper* 6493; Belknap Springs, *Gorman* 1834; without locality, *Hall* 671 (Gray Herb.).

NEVADA: Ruby Valley, *Watson* 1350.

ARIZONA: Lowell, *W. F. Parish* 263.

CALIFORNIA. Castle Crag, *Hitchcock* 3070, 3071, 3073, 3077; Redding, *Heller* 7856; Yosemite Valley, *Bolander* 4840, *Hall & Babcock* 3317, 3362, *Hitchcock* 3214, 3219, 3232, 3233, 3234; Crow Point, *Hansen* 1444; Clinton Bar, *Hansen* 1381; Pine Grove, *Hansen* 626; North Fork, *Griffiths* 4438, 4476, 4617; Madera, *Griffiths* 6586; San Jacinto Mountains, *Hall* 2244; Pine Ridge, *Hall & Chandler* 239; Santa Cruz, *Jones* 2294; Point Reyes, *Davy* 6745, 6780; Requa, *Davy & Blasdale* 5894; San Bernardino Mountains, *S. B. & W. F. Parish* 1663; without locality, *Bolander* 564, *Hartweg* 2024 (Gray Herb.).

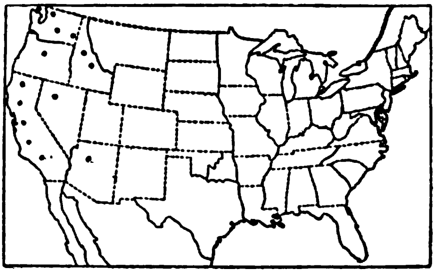


FIG. 242.—Distribution of *P. pacificum*.

135. Panicum thermale Boland.

Panicum thermale Boland. Proc. Calif. Acad. 2: 181. 1862. "On hot rocks and in hot water flowing from the Geyser springs and Geyser mountains, in the northern part of Sonoma County," California. The type, in the Gray Herbarium, is the early branching form. It is marked "I call this: Panicum thermale till I shall know better. It grows in the Geysers Sonoma Co. and on hot rocks."

DESCRIPTION.

Vernal culms grayish green, densely tufted, velvety-villous, 10 to 30 cm. high, ascending or spreading, the nodes with a dense ring of short hairs; sheaths often overlapping, velvety-villous; ligules 3 mm. long; blades thick, ascending or spreading, 3 to 8 cm. (mostly about 5 cm.) long, 5 to 12 mm. wide, acuminate, rounded or subcordate at base, both surfaces densely velvety-villous; panicles exserted or in high alpine specimens partly included, 3 to 6 cm. long, about as wide, densely flowered, the axis villous, the flexuous branches spreading, often drooping; spikelets 1.9 to 2 mm. long, 1 mm. wide, obovate-oblong, obtuse, turgid, papillose-pilose; first glume about one-third the length of the spikelet, obtuse or abruptly pointed; second glume and sterile lemma subequal, the glume shorter than the fruit at maturity; fruit 1.7 mm. long, 1 mm. wide, elliptic, subobtuse.

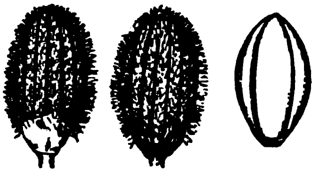


FIG. 243.—*P. thermale*. From type specimen.

Autumnal form widely spreading, the branches appearing even before the primary panicles are exserted, repeatedly branching, the whole forming a dense cushion, the blades and panicles of the ultimate branchlets reduced; winter rosette appearing early, the blades ovate-lanceolate, usually less pubescent than those of the culms.

In the original description Dr. Bolander states: "The whole plant is like velvet to the feel. There are, however, some specimens which are rather smooth." This smoother form is represented by part of *Merrill* 157, one tuft of which has lower blades nearly glabrous, but sheaths and upper blades nearly as velvety as in the type, while other specimens of this collection are fully as villous. The Bolander type collection represents about the average of the species. Some of the specimens cited below are longer villous than the type and some few are smoother.

A specimen from Banff, Alberta, *McCalla* 2318, "on tufa and old bogs in warm sulphur stream; alt. 4,500 ft.," has short, early-branching culms, broad leaves and small panicles like *P. thermale*, but the pubescence is of sparser long hairs, somewhat harsh and prominently papillose as in *P. pacificum*.

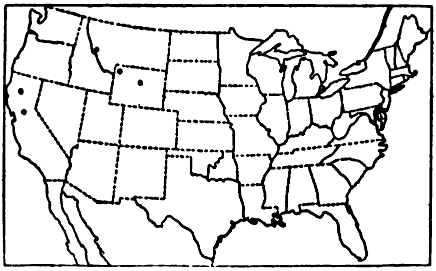


FIG. 244.—Distribution of *P. thermale*.

DISTRIBUTION.

Wet saline soil in the immediate vicinity of geysers and hot springs ascending to 2,500 meters, Alberta to Wyoming and California.

ALBERTA: Banff, *McCalla* 2318.

MONTANA: Lo Lo Hot Springs, *Williams & Griffiths* 306.

WYOMING: Yellowstone National Park, *Chase* 5252; *Hitchcock* 1902, 2061, 2086, *Mearns* 3061, 4050, 4166, 4203, 4789, 4870, 4983, 5064, 5110, 5134, *Merrill* 157, 164, 165, *A. Nelson* 6174, *A. Nelson & E. Nelson* 6037, *Rydberg & Bessey* 3545, 3547, *Tweedy* 580; Bighorn County, *Tweedy* 94.

CALIFORNIA: Sonoma County, *Bolander* 3941; Napa County, *Brewer* 861; Lassen Peak, *Bolander* 2169.

136. **Panicum languidum** nom. nov.

Panicum unciphyllum forma *prostratum* Scribn. & Merr. Rhodora **3**: 124. 1901, not *P. prostratum* Lam. 1791. "South Berwick, Maine, *M. L. Fernald*, September 26, 1897." The type, in the National Herbarium, is a lax, decumbent, autumnal specimen with geniculate nodes, numerous loose branches with immature panicles, and pointed spikelets 2 mm. long.

DESCRIPTION.

Vernal form tufted; culms 25 to 40 cm. high, weak, slender, ascending or spreading, pilose; sheaths shorter than the internodes, papillose-pilose; ligules about 3 mm. long; blades thin, lax, ascending or spreading, 4 to 7 cm. long, 4 to 9 mm. wide, acuminate, slightly narrowed to the rounded base, sparsely pilose on the upper surface, minutely appressed-pubescent beneath, usually with long hairs intermixed; panicles rather long-exserted, 3 to 6 cm. long, two-thirds to three-fourths as wide, loosely flowered, the very flexuous branches finally spreading or drooping, the spikelets on long, mostly divaricate, flexuous pedicels, the axis and branches sparsely long-pilose; spikelets 2 mm. long, 1 mm. wide, elliptic, acute, pilose; first glume about one-third the length of the spikelet, obtuse or acute; second glume and sterile lemma exceeding the fruit and slightly pointed beyond it; fruit 1.5 mm. long, 1 mm. wide, obtuse.

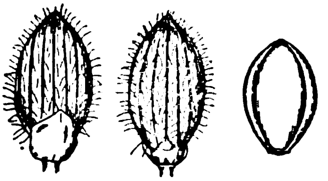


FIG. 245.—*P. languidum*. From type specimen of *P. unciphyllum* forma *prostratum* Scribn. & Merr.

Autumnal form decumbent, with geniculate, sometimes rooting nodes, branching from all the nodes, the early branches nearly equaling the primary culm, repeatedly branching, forming a large, loose straggling clump, the ultimate blades and panicles scarcely reduced.

Type U. S. National Herbarium no. 592750 collected September 26, 1897, South Berwick, Maine, by M. L. Fernald, being the type of *P. unciphyllum* forma *prostratum*.

This species somewhat resembles *P. villosissimum*, though much less copiously pilose. It may be distinguished from that species and from *P. huachucae silvicola* by the pointed spikelets 2 mm. long, the second glume and sterile lemma produced in a minute point beyond the fruit.

DISTRIBUTION.

Dry or sandy open woods, Maine, Massachusetts and eastern New York; apparently rare.

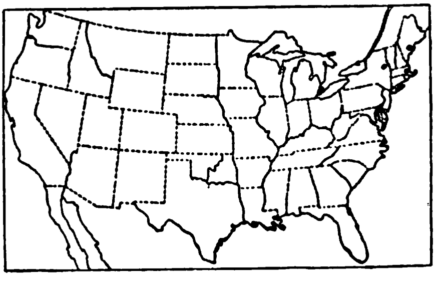


FIG. 246.—Distribution of *P. languidum*.

MAINE: South Berwick, *Fernald* in 1897, *Parlin* 938 (Gray Herb.); Island Falls, *Fernald* in 1897; Mount Desert Island, *Fernald* in 1892 in part (the last two in N. E. Bot. Club Herb.).

MASSACHUSETTS: Ashburnham, *Harris* in 1896.

NEW YORK: Platte Clove, Catskills, *Williamson* in 1903 (Phila. Acad. Herb.).

137. Panicum villosissimum Nash.

Panicum tectum Willd.; Spreng. Syst. Veg. **1**: 313. 1825. This is given as a synonym under *P. dichotomum*. The type specimen, in the Willdenow Herbarium, is the autumnal form. It is labeled "Panicum tectum panicula divaricata. * * * Hab. a America boreali." A second specimen so named in the Willdenow Herbarium was sent by Muhlenberg and is *P. xalapense*.

Panicum dichotomum villosum Vasey, U. S. Dept. Agr. Div. Bot. Bull. **8**: 31. 1889, not *P. villosum* Ell. 1816. The author cites "*P. villosum* Ell.?" but since on the same page he gives this name unquestioned as a synonym of *P. consanguineum* Kunth, Elliott's species can not be taken as the basis of Vasey's variety. No locality nor specimen is cited. A freely branching early autumnal specimen in the National Herbarium marked "dichotomum var. villosum" in Vasey's writing, and agreeing well with his description, is chosen as the type. This was collected "near Pierce's Mill, Rock Creek, D. C., July 1, 1883," by Dr. Vasey.

Panicum nitidum pubescens Scribn. in Kearney, Bull. Torrey Club **20**: 479. 1893. This is listed without description as the name of two numbers, 58 and 141, of Kearney's collection of plants in Harlan and Bell Counties, Kentucky. "*Panicum laxiflorum pubescens* Chapm." is cited but as the latter name had not at that time been published by Chapman, *P. nitidum pubescens* must be considered a nomen nudum. The specimens of his 58 and 141 in the National Herbarium, and distributed by Kearney, comprise *P. villosissimum* and *P. huachucae*, but the majority are the former.

Panicum laxiflorum pubescens Chapm.; Kearney, Bull. Torrey Club **20**: 479. 1893, not Vasey 1892. This is given as a synonym of *P. nitidum pubescens* Scribn., but is later described by Chapman[a] and based on *P. pubescens* Lam.

Panicum villosissimum Nash, Bull. Torrey Club **23**: 149. 1896. "Collected by Dr. John K. Small in the Ocmulgee River swamp, below Macon [Georgia], May 18–24, 1895." The type, in Nash's herbarium, consists of several vernal culms with branches appearing, but secondary panicles not expanded. The spikelets are 2.3 mm. long.

Panicum atlanticum Nash, Bull. Torrey Club **24**: 346. 1897. "Type specimens collected by the writer on dry somewhat shaded knolls in the grounds of the New York Botanical Garden." The type, in Nash's herbarium, consists of a small clump and of two single specimens, the culms beginning to branch, primary panicles mature, secondary panicles immature. The spikelets are 2.2 mm. long. This differs from the type of *P. villosissimum* only in the somewhat stiffer culms and slightly smaller spikelets.

Panicum haemacarpon Ashe, Journ. Elisha Mitchell Soc. **15**: 55. 1898. "District of Columbia: Kearney; 1897. Ashe: North Carolina; Chapel Hill, 1898. Iowa: Carver; Jewell Junction, 1895, No. 258." The first specimen cited is chosen as the type. This is in Ashe's herbarium and consists of a tuft of three simple culms with nearly mature panicles and two autumnal culms of the previous year.

Panicum xanthospermum Scribn. & Mohr, Contr. Nat. Herb. **6**: 348. 1901. "Type specimen collected by Dr. Charles Mohr in open sandy soil, Greenville, Butler County, Ala., May 8, 1898." This specimen, which is in the National Herbarium, consists of a tuft with two simple culms 18 and 20 cm. high, and the burned bases of others, evidently a second growth after a fire. Except in its smaller size it compares well with the type of *P. atlanticum*. The spikelets, which are immature, are 2.2 mm. long. By selecting the shorter culms it could be matched from many typical clumps of *P. villosissimum*.

This species was described by Scribner[b] as *Panicum pubescens* Lam., as indicated by a note upon a sheet, then in his possession, of a duplicate type of *P. villosissimum*.

---

[a] Fl. South. U. S. ed. 3. 586. 1897.

[b] Tenn. Agr. Exp. Sta. Bull. **7**: 52. *pl. 15. f. 58*. 1894.

DESCRIPTION.

Vernal plants light olive green; culms densely tufted, 25 to 45 cm. high, slender, erect or ascending, papillose-pilose with spreading hairs 3 mm. long; sheaths shorter than the internodes, pilose like the culm; ligules 4 to 5 mm. long; blades rather firm, ascending or sometimes spreading, 6 to 10 cm. long, 5 to 10 mm. wide, often subinvolute toward the acuminate apex, little narrowed toward the base, pilose on both surfaces, the hairs of the upper surface appressed, longer and less copious; panicles short-exserted, 4 to 8 cm. long, usually as wide, loosely flowered, the spikelets long-pediceled, the axis sparsely pilose, the branches rather stiffly ascending or spreading; spikelets 2.2 to 2.3 mm. long, 1.1 mm. wide, oblong-elliptic, obtuse or obscurely pointed, papillose-pubescent with spreading hairs; first glume sometimes glabrous, one-third to nearly half the length of the spikelet, acute; second glume and sterile lemma subequal, the glume slightly shorter than the fruit at maturity; fruit 1.9 mm. long, 1 mm. wide, elliptic, subacute.

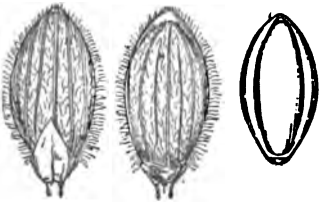


FIG. 247.—*P. villosissimum.* From type specimen.

Autumnal form at first decumbent, often with geniculate nodes and arched internodes, the first branches appearing at about the maturity of the primary panicle, late in the season prostrate, the leaves of the fascicled branchlets appressed, giving a combed-out appearance, a character conspicuous in the field but less so in the herbarium; blades not greatly reduced, often with only a few hairs on the upper surface, overtopping the much reduced panicles; winter rosette appearing rather early, blades long, bluish green, densely pilose.

This is fairly uniform as a whole for a species of so wide a range, but exceptional specimens with spikelets only 2 mm. long occur, such as *Andrews*, Southington, Conn., in 1902; *Chase* 2378, 3762; *Dodge* 60, 83; *Herriot* 86; *Hitchcock* 1635; *Smith*, Framingham, Mass., in 1898. In these the habit and other characteristics are those of the typical form. Another rarer variation with blades nearly or quite glabrous on the upper surface is found, as *Ashe*, Manteo, N. C., *Chase* 3121, *Commons* 52.

DISTRIBUTION.

Dry sandy or sterile soil, open woods and hillsides, Massachusetts to Minnesota, south to Florida and Texas.

MASSACHUSETTS: Framingham, *Smith* in 1898.
CONNECTICUT: Franklin, *Graves* 14; Southington, *Andrews* in 1902.
NEW YORK: Bronx Park, *Nash* in 1897; Long Island, *Bicknell* in 1902 and 1904.
ONTARIO: Galt, *Herriot* 86; Squirrel Island, *Dodge* 60, 83.
NEW JERSEY: South Amboy, *Mackenzie* 1381; Wildwood Junction, *Chase* 3522.
PENNSYLVANIA: Westchester, *Windle* 12f. (Hitchcock Herb.)
OHIO: Sandusky, *Morris* 135.
INDIANA: Clark, *Bebb* 2833, 2834; Miller, *Chase* 1545, 1563; *Umbach* 2646 and in 1897.
ILLINOIS: Madison County, *Eggert* 293; Starved Rock, *Chase* 1606.
MICHIGAN: Carleton, *Wheeler* in 1890 (Mich. Agr. Col. Herb.).
WISCONSIN: Juneau County, *Mearns* 25.
MINNESOTA: Minneapolis, *Sandberg* 316 in part (Hitchcock Herb.).
MISSOURI: Monteer, *Bush* 732, 750, 4788; Chadwick, *Bush* 14; Eagle Rock, *Bush* 141; Pleasant Grove, *Bush* 333; Carter County, *Eggert* 291; Jefferson County, *Eggert* 292; Noel, *Bush* 5023.
DELAWARE: Rehoboth, *Commons* 56 in part; Greenbank, *Commons* 38; Frankford, *Commons* 52; Lewes, *Hitchcock* 161.

MARYLAND: Between Chesapeake Beach and Chesapeake Junction, *Hitchcock* 1608, 1619, 1623, 1627, 1631, 1635, 1643, 1644, 2415; Riverdale, *Chase* 2378; Beltsville, *Chase* 3762½; Cabin John, *Chase* 2905; Hyattsville, *Steele* in 1907.

DISTRICT OF COLUMBIA: *Hitchcock* 393, 2403, *Kearney* 29, *Vasey* 125, *Ward* in 1879, *Williams* 5.

VIRGINIA: Four-Mile Run, *Chase* in Kneucker Gram. Exs. 555, *Hitchcock* 391, *Pollard* 337; Norfolk, *Kearney* 302; Dismal Swamp, *Chase* 3653, 3675, *Tyler* in 1905; Munden, *Mackenzie* 1710.

NORTH CAROLINA: Manteo, *Ashe* in 1898; Raleigh, *Chase* 3081; Chapel Hill, *Chase* 3055, 3056, 3058, 3071, 3075; Wilmington, *Chase* 3121, 3141, 3155, *Hitchcock* 394; Biltmore, *Boynton* 4; Magnetic City, *Wetherby* 64; Jacksonville, *Chase* 3191; Lenoir, *Hitchcock* 395.

SOUTH CAROLINA: Orangeburg, *Hitchcock* 392, 1384; Clemson College, *House* 2158.

GEORGIA: Lookout Mountain, *Ruth* 19; Stone Mountain, *Hitchcock* 396; Rabun County, *House* 2269; Lagrange, *Tracy* 8869; Warm Springs, *Tracy* 8859; Macon, *Small* in 1895; Thomson, *Bartlett* 1414, 1497; Augusta, *Cuthbert* 387, 1120.

FLORIDA: Chipley, *Combs* 613; Chattahoochee, *Tracy* 3653, 3658; Leon County, *Curtiss* F in 1886 in part.

KENTUCKY: Harlan County, *Kearney* 58 in part, 141.

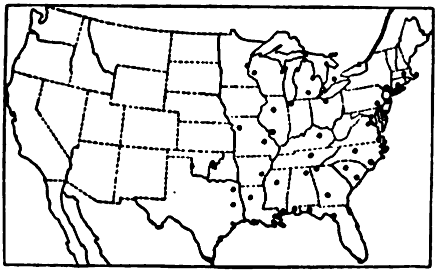


FIG. 248.—Distribution of *P. villosissimum*.

TENNESSEE: Cocke County, *Kearney* 971; Knoxville, *Ruth* 72 in part.

ALABAMA: Auburn, *Tracy* 3751, 3753, 3754, 3758; Pisgah, *Chase* 4472; Gateswood, *Tracy* 8426 in part; Tuskegee, *Carver* 19; Mobile, *Kearney* 34 in part; Flomaton, *Hitchcock* 1046; Greenville, *Mohr* in 1898.

MISSISSIPPI: Starkville, *Kearney* 24 in part; Taylorville, *Tracy* 8415; Jackson, *Hitchcock* 1299; Enterprise, *Tracy* 3272; Biloxi, *Kearney* 337; Ocean Springs, *Tracy* 161; Mississippi City, *Hitchcock* 1109.

ARKANSAS: Benton County, *Plank* 42, 100.

LOUISIANA: Calhoun, *Hitchcock* 1259, 1275, 1289; Shreveport, *Hitchcock* 1256.

TEXAS: Waller County, *Thurow* 25; Weatherford, *Tracy* 7943 in part; Angelina County, *Reverchon* 4136; Denison, *Bebb* 2661.

OKLAHOMA: Sapulpa, *Bush* 1220.

138. Panicum pseudopubescens Nash.

Panicum pseudopubescens Nash, Bull. Torrey Club **26**: 577. 1899. "Type collected at Auburn, Lee Co., Alabama, May 7, 1898, by Messrs. F. S. Earle and C. F. Baker, No. 1537." The type, in Nash's Herbarium, is a clump of a few vernal, mostly immature culms. Some of the blades are nearly naked along the middle of the upper surface. Other specimens cited by Nash under this species, *Earle & Baker* 1522, 1524, 1526, 1529, have narrower blades than the type, with the upper surface often nearly glabrous; these represent the more usual form of the species.

This species was described by Elliott [a] as *P. pubescens* Lam., as shown by the specimen so labeled in his herbarium. The culm of this is appressed-pubescent, not "very glabrous," as stated in the description.

The species described in Gray's Manual [b] under *P. ovale* Ell. is *P. pseudopubescens*.

---

[a] Bot. S. C. & Ga. 1:125. 1816.

[b] A. Gray, Man. ed 7. 111. 1908.

DESCRIPTION.

Vernal form similar to that of *P. villosissimum;* culms somewhat stiffer, the pubescence more silky, appressed on the culms, ascending on the sheaths; ligules 2 to 3 mm. long; blades somewhat firmer, the pubescence on the upper surface short like that on the lower and sparse or wanting down the center or occasionally glabrous on the upper surface; panicles averaging larger, the spikelets not so long-pediceled; spikelets 2.25 to 2.4 mm. long, 1.1 mm. wide, obovate-elliptic, obtuse, or slightly pointed, pubescence as in *P. villosissimum;* second glume slightly shorter than the fruit at maturity; fruit 1.9 mm. long, 1 mm. wide, elliptic, subacute.

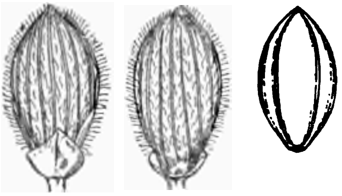


FIG. 249.—*P. pseudopubescens.* From type specimen.

Autumnal form usually stiffly spreading, sometimes prostrate, culms sparingly branching from the lower and middle nodes after the maturity of the primary panicle, less freely branching than *P. villosissimum;* the upper surface of the reduced blades usually glabrous except along the margins and at the base; winter leaves as in *P. villosissimum.*

This species is very closely allied to *P. villosissimum* and occasional specimens are about as close to one type as to the other. In these cases the ascending, more silky pubescence of the culms and less pubescent or glabrous upper surface of the blades, together with the stiffer habit, have been used to distinguish *P. pseudopubescens.*

DISTRIBUTION.

Sandy, open woods, Connecticut to Illinois, south to Florida and Mississippi; also in Mexico.

CONNECTICUT: South Britain, *Harger* 6031 (Bissell Herb.).

NEW JERSEY: Atsion, *Chase* 3566; Camden, *Smith;* Wildwood Junction, *Chase* 3520.

OHIO: Cedar Point, *Claassen* (Gray Herb.).

INDIANA: Miller, *Chase* 1542, *Umbach* in 1898; Clark, *Umbach* 1685; Clark Junction, *Bebb* 514, 2882; Dune Park, *V. H. Chase* 291, *Hill* 100 and 101 in 1905, *Umbach* 1080.

ILLINOIS: Starved Rock, *Chase* 1605; Hanover, *Gleason & Gates* 2535, 2539, 2575.

MICHIGAN: Saginaw Bay, *Morris* 240 in part; Twin Lakes, *Wheeler* in 1900.

MARYLAND: Caroline County, *Norton* in 1907.

DISTRICT OF COLUMBIA: *Steele* in 1899.

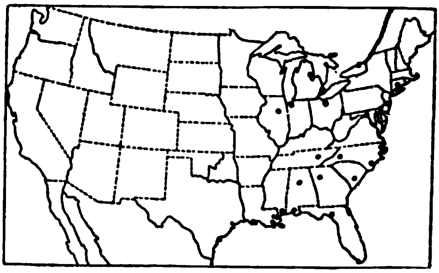


FIG. 250.—Distribution of *P. pseudopubescens.*

NORTH CAROLINA: Roanoke Island, *Ashe* in Curtiss Pl. So. U. S. 6452, *Chase* 3218, 3222; Wilmington, *Chase* 3109, 3115, 3147, 3160, *Hitchcock* 1437, 1474, 1476, 1484, 1485; Biltmore, *Boynton* in 1906.

SOUTH CAROLINA: Orangeburg, *Hitchcock* 398, 1380, 1383, 1394, 1401, 1402; Fripps Island, *Cuthbert* 1164.

GEORGIA: Stone Mountain, *Hitchcock* 397, 1356, 1357.

FLORIDA: Lake City, *Hitchcock* 1013½.

TENNESSEE: Ducktown, *Chambliss* 26.

ALABAMA: Auburn, *Earle & Baker* 1522, 1537, *Hitchcock* 1331, 1336; Gateswood, *Tracy* 8426 in part; Flomaton, *Hitchcock* 1048.

MISSISSIPPI: Biloxi, *Hitchcock* 1080; Mississippi City, *Hitchcock* 1090, 1096, 1112, *Kearney* 301 in part.

MEXICO: San Luis Potosí, *Schaffner* 146.

139. Panicum ovale Ell.

Panicum ovale Ell. Bot. S. C. & Ga. 1 : 123. 1816. "Grows in Carolina and Georgia. Sent from St. Mary's, Georgia, by Dr. Baldwin." The type, in the Elliott Herbarium, consists of the upper portion of a vernal culm with two leaves and an immature panicle included at base, the culm and sheaths densely pilose with ascending hairs, the blades long pilose along the margin. The ticket attached to this specimen reads: "Panicum Ovale. Hab. St. Mary's Georg. Dr. Baldwin." Another vernal culm with immature panicle mounted on the same sheet belongs to *P. commutatum*. To the culm is attached a slip marked "64" but with no data. Since Dr. Baldwin's is the only specimen cited, the one with the Baldwin label must be considered the type, though Elliott's description seems to show he had the two confused.

Panicum ciliiferum Nash, Bull. Torrey Club **24**: 195. 1897. "Type collected by the writer in the 'high pine land' at Eustis, Lake Co., Florida, March 12–31, 1894, no. 147." The type, in Nash's herbarium, is the vernal form with an old autumnal culm attached. The spikelets are 2.8 mm. long. In a note following the description Nash states that after having examined a specimen named *P. ovale* by Elliott he considers *P. ciliiferum* as distinct. The specimen referred to is in the Torrey Herbarium, and is labeled *Panicum ovale* Elliott, "From Elliott." This is a puberulent narrow-leaved form of *P. commutatum*, and is the form described in Small's Flora[a] as *P. ovale*.

Panicum erythrocarpon Ashe, Journ. Elisha Mitchell Soc. **16**: 90. 1900. "The type material was collected by the writer on the sand hills of New Hanover county, N. C., May 19, 1899." The type, in Ashe's herbarium, is the vernal form, labeled, "Shady slopes on the sand hills one mile north of Wilmington [New Hanover County], N. C."

DESCRIPTION.

Vernal plants light olive green; culms densely tufted, 20 to 50 cm. high, erect or ascending, rather stout, long-pilose below with ascending or appressed hairs, often nearly glabrous above, usually leafy at the base, the nodes densely bearded with short spreading hairs; sheaths shorter than the internodes or the lower overlapping, ascending-pilose, the upper less densely so, rarely nearly glabrous; ligules composed of a ring of hairs about 1 mm. long with a second sparse ring 2 to 3 mm. long above it; blades firm, ascending, 6 to 10 cm. long, 5 to 10 mm. wide (the uppermost much smaller), sharply acuminate, rounded at base, the upper surface usually nearly glabrous except for long hairs on or near the margin and base thus giving the blades the appearance of being strongly ciliate, these hairs occasionally wanting except at the base, the lower surface appressed-pubescent; panicles usually short-exserted, 5 to 9 cm. long, about as wide when fully expanded, the lower branches finally spreading, rarely drooping; spikelets 2.7 to 2.9 mm. long, 1.3 mm. wide, oblong-elliptic, obtuse, pilose, sometimes rather sparsely so; first glume one-third to nearly half the length of the spikelet, usually pointed; second glume

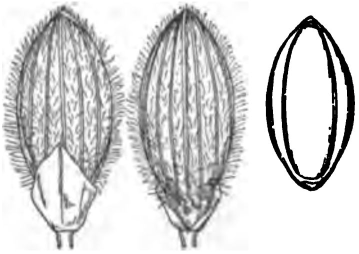


FIG. 251—*P. ovale*. From type specimen.

---

[a] Fl. Southeast. U. S. 102. 1903.

slightly shorter than the fruit and sterile lemma at maturity; fruit 2.2 mm. long, 1.2 mm. wide, elliptic, obtuse.

Autumnal form spreading-decumbent, the stiff culms rather loosely branching from the middle and upper nodes, the ultimate branchlets crowded at the ends of the primary branches, the reduced blades erect; winter leaves very firm, conspicuously ciliate; short culms with tufted branches sometimes formed during the winter, the green bushy crown persistent at the base of the tall vernal culms.

Curtiss's no. 4877 is referred here although the specimens resemble *P. commonsianum*, and the ligule is only 1 mm. long, as in that species; the spikelets, however, are those of *P. ovale*.

DISTRIBUTION.

Dry sandy woods, North Carolina to Florida, also in Texas.

NORTH CAROLINA: Near Wilmington, *Ashe* in 1899, *Chase* 4589.

SOUTH CAROLINA: Isle of Palms, *Hitchcock* 107; Aiken, *Ravenel*.

FLORIDA: Duval County, *Curtiss* 3583* in part; Jacksonville, *Curtiss* 4877, 5866, 5813; Lake City, *Combs* 138, 145, *Hitchcock* 550, 1013; Madison, *Combs* 225; Chattahoochee, *Tracy* 3617; Gainesville, *Chase* 4250, 4261; Old Town, *Combs* 888; Eustis, *Curtiss* 6616, *Nash* 75, 103, 147, 1118, 1518, 1857; Lake Harris, *Chase* 4118; Tavares, *Hitchcock* 820; Grasmere, *Combs* 1080; Sanford, *Hitchcock* 785, 787; Titusville, *Hitchcock* 761½; Ormond, *Hitchcock* 160; Dunedin, *Tracy* 6725; Braidentown, *Hitchcock* 968; Lakeland, *Hitchcock* 833, 846, 847, 851; Myers, *Chase* 4174, *Hitchcock* 900, 914, Lee Co. Pl. 474; Miami, *Chase* 3866, 3947, *Hitchcock* 634, 661, 668, 677, 719, *Pollard & Collins* 223; Homestead, *Hitchcock* 688.

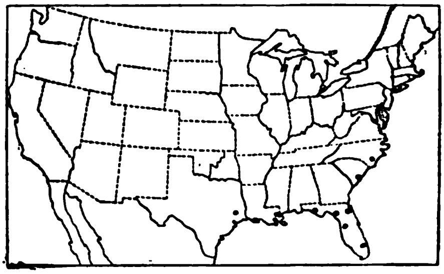


FIG. 252.—Distribution of *P. ovale*.

TEXAS: Waller County, *Thurow* 17 in 1906.

140. Panicum scoparioides Ashe.

Panicum scoparioides Ashe, Journ. Elisha Mitchell Soc. 15: 53. 1898. "Based on No. 283, ex. Herb. A. Commons. Dry soil. Centreville, Del. June 1873. Distributed sub nom. *P. Scribnerianum* Nash." This specimen could not be found in Ashe's herbarium, but a specimen bearing the above name and data is in the National Herbarium and is doubtless the type.[a] This consists of four vernal culms with immature panicles partly included in the uppermost sheaths.

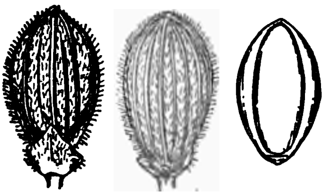


FIG. 253.—*P. scoparioides*. From type specimen in National Herbarium.

DESCRIPTION.

Vernal plants light green; culms few to several in a tuft, 30 to 50 cm. high, slender, erect or ascending, sparsely papillose-hispid with ascending hairs or nearly glabrous, the upper internodes shortened; nodes sometimes sparsely bearded; sheaths papillose-hispid to nearly glabrous, the lower distant, the upper approximate, sometimes overlapping; ligules 2 to 3 mm. long; blades firm, ascending, 7 to 10 cm. long, 6 to 10 mm. wide, tapering to the rounded base, acuminate, appressed-pubescent beneath, sparsely hispid on the upper surface, usually a few long hairs at the base; panicles short-exserted, usually included at the base until maturity, rather densely flowered, 4 to 7 cm. long, about two-thirds as wide, the branches ascending; spikelets 2.2 to 2.3 mm. long, 1.2 mm. wide, obovate, obtuse or minutely pointed; first glume about one-fourth as long as the spikelet, subacute; second glume and sterile lemma papillose-pubescent, strongly nerved, subequal, as long as the fruit, the margins at the summit usually inrolled, the midnerve produced into an apiculus; fruit 1.9 mm. long, 1.1 mm. wide, elliptic.

---

[a] See note on type of *P. huachucae*, page 215.

Autumnal form erect or spreading, culms sparingly branching from the upper and middle nodes after the maturity of the primary panicle, the stiff, reduced blades involute-pointed, much exceeding the panicles.

This species is less pubescent than any other in this group except *P. occidentale*. The smoother specimens somewhat resemble *P. boreale*.

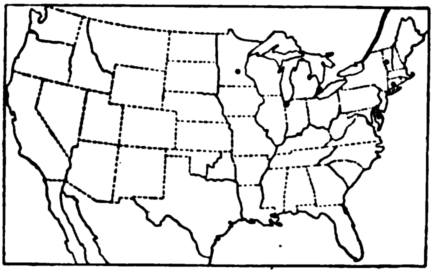


FIG. 254.—Distribution of *P. scoparioides*.

DISTRIBUTION.

Dry sandy or gravelly soil, Vermont to Delaware; also in Minnesota; apparently rare.

VERMONT: Hartland, *Jones* 30.

CONNECTICUT: Southington, *Bissell* 385, 5581, 8084; East Lyme, *Graves* in 1903 (Hitchcock Herb.).

INDIANA: Gary, *Umbach* 3686.

MINNESOTA: Hennepin County, *Sandberg* in 1890; Ramsey County, *Oestlund* in 1884 in part.

DELAWARE: Centerville, *Commons* 283, 359.

141. **Panicum shastense** Scrib. & Merr.

Panicum shastense Scribn. & Merr. U. S. Dept. Agr. Div. Agrost. Circ. **35**: 3. 1901. "Type specimens collected in a moist meadow at the edge of pine forests at Castle Crag, near Mt. Shasta, California, by Louis A. Greata, June, 1899." The type, in the National Herbarium, consists of three vernal culms, 25 to 30 cm. high, with short-exserted, nearly mature panicles.

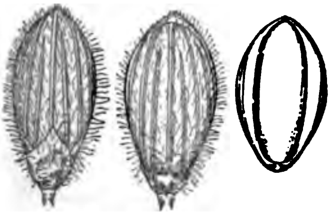


FIG. 255.—*P. shastense*. From type specimen.

DESCRIPTION.

Vernal form pale green; culms tufted, 30 to 50 cm. high, slender, ascending from a more or less geniculate base, papillose-pilose with ascending hairs; nodes short-bearded; sheaths papillose-pilose, the hairs spreading; hairs of the ligule rather sparse, 2 to 3 mm. long; blades ascending, 6 to 8 cm. long, 6 to 8 mm. wide, acuminate, scarcely narrowed toward the base, papillose-pilose on the under surface and with scattered long hairs on the upper; panicles short-exserted, 6 to 8 cm. long, about two-thirds as wide, the axis pilose, the flexuous branches ascending; spikelets 2.4 to 2.6 mm. long, 1.2 to 1.4 mm. wide, obovate-oblong, obtuse, papillose-pubescent; first glume one-fourth to one-third as long as the spikelet, pointed; second glume scarcely equaling the fruit and sterile lemma; fruit 2.1 mm. long, 1.3 mm. wide, elliptic.

Autumnal form spreading, with geniculate nodes and elongated, arched internodes, rather sparingly branching from the middle nodes, the primary branches elongated, the ultimate branchlets shorter than the internodes.

DISTRIBUTION.

Known only from Castle Crag, Shasta County, California, where it is found in meadows.

CALIFORNIA: Castle Crag, *Greata* in 1899, *Hitchcock* 3072.

Columbiana.—Culms stiff, pubescent with appressed or ascending villous hairs, or crisp-puberulent, the sheaths pubescent like the culms or nearly glabrous; ligules usually less than 1 mm. long, rarely 1.5 mm. long; blades firm, thick, stiffly ascending, not over 7 mm. wide; spikelets pubescent, 1.3 to 3.2 mm. long, 5 to 9-nerved. Autumnal form freely branching, the branches and stiff blades mostly appressed. With the exception of *P. tsugetorum*, confined to dunes and dry sands of the Coastal Plain, Massachusetts to Florida.

The species of this group form a lineal series from *P. malacon* with spikelets 3.2 mm. long to *P. columbianum thinium* with spikelets only 1.3 mm. long. With the exception of *P. malacon* and *P. wilmingtonense*, there are connecting forms between the successive species in this series, especially between *P. commonsianum* and *P. addisonii*, and between *P. tsugetorum* and *P. columbianum*. These intermediate specimens are, however, comparatively rare. On the other hand, *P. oricola* and hairy forms of *P. tsugetorum* make a clear cut division between the Lanuginosa and Columbiana impossible.

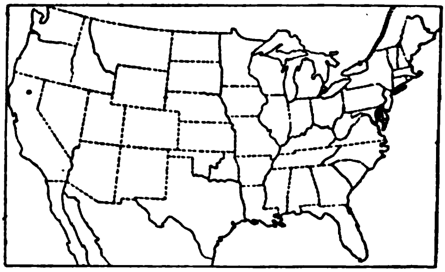


FIG. 256.—Distribution of *P. shastense*.

Spikelets 2 to 3.2 mm. long, mostly elliptic.

Winter blades elongated, 5 to 10 cm. long; spikelets 2 mm. long; plants blue green...................... 145. *P. wilmingtonense*.

Winter blades 1 to 3 cm. long.

Spikelets 3.2 mm. long; first glume conspicuously distant.................................... 142. *P. malacon*.

Spikelets not over 2.5 mm. long; first glume not distant.

Spikelets about 2.4 mm. (2.2 to 2.4 mm.) long; panicle open, branches stiffly spreading .. 143. *P. commonsianum*.

Spikelets 2 to 2.1 mm. long; panicle rather dense, branches ascending...................... 144. *P. addisonii*.

Spikelets not over 1.9 mm. long, obovate, turgid.

Culms crisp-puberulent or appressed-pubescent with crimped hairs; plants bluish or grayish green; panicles about 3 to 7 cm. long.

Spikelets 1.8 to 1.9 mm. long...................... 146. *P. tsugetorum*.

Spikelets 1.5 to 1.6 mm. long...................... 147. *P. columbianum*.

Culms appressed or ascending-pilose; spikelets not over 1.5 mm. long, rounded and turgid; plants olivaceous; panicles rarely more than 3 cm. long.

Spikelets 1.5 mm. long; culms rather stout; autumnal form branching from all the nodes........... 148. *P. oricola*.

Spikelets 1.3 to 1.4 mm. long; culms very slender; autumnal form with branches mostly aggregated toward the summit....................147a. *P. columbianum thinium.*

142. **Panicum malacon** Nash.

Panicum malacon Nash, Bull. Torrey Club **24**: 197. 1897. "Collected by the writer in the 'high pine land' at Eustis, Lake County, Florida, May 1–15, 1894, no. 628." The type, in Nash's herbarium, is the early branching form, the numerous branches appressed, the blades densely puberulent on both surfaces.

Panicum strictifolium Nash, Bull. Torrey Club **26**: 579. 1899. "Collected by the writer in the high pine land at Eustis, Lake Co., Florida, May 3, 1894, no. 603. Most nearly related to *P. malacon*, but distinguished by the less copious pubescence which is much finer and softer, and by the glabrous upper surface of the blades." The type, in Nash's herbarium, is the early branching form, the primary panicles destitute of spikelets and the secondary panicles immature. This is less densely pubescent than is *Nash* 628, but the pubescence is not softer. The type of *P. malacon* is more copiously pubescent than are most specimens of this species. The spikelets of the two types are identical except that those of *Nash* 603 are immature, while those of no. 628 are mature.

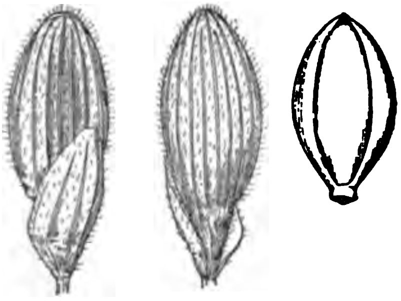


FIG. 257.—*P. malacon*. From type specimen.

DESCRIPTION.

Vernal form erect or stiffly spreading, purplish olive green; culms 30 to 50 cm. high, pubescent with ascending hairs, the nodes short-pubescent; sheaths pubescent like the culms, sometimes sparsely so; blades stiffly ascending or somewhat spreading, 4 to 12 cm. long, 3 to 5 mm. wide, rarely wider, sharply acuminate, scarcely narrowed toward the base, puberulent beneath, puberulent or glabrous above, often villous at or near the margin or base with long hairs; panicles 4 to 7 cm. long, three-fourths to nearly as wide, few-flowered, branches few, stiffly ascending, the spikelets on long, stiff pedicels; spikelets 3 to 3.2 mm. long, 1.4 to 1.5 mm. wide, obovate (oblong before maturity), pubescent; first glume distant, half as long as the spikelet or more, subacute, 5 to 7-nerved; second glume scarcely equaling the fruit and sterile lemma; fruit short-stipitate, 2.5 mm. long, 1.4 mm. wide, elliptic, acute.

Autumnal form more or less decumbent-spreading, branching from the lower and middle nodes, the branches appressed and later rather sparingly producing appressed fascicled branchlets, the reduced blades stiff, erect, and involute-pointed.

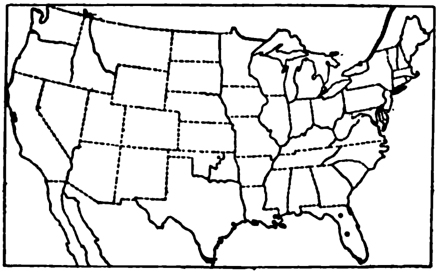


FIG. 258.—Distribution of *P. malacon*.

DISTRIBUTION.

Dry pine woods, the so-called "high pine land," Florida.

FLORIDA: East Pass, *Tracy* 9140; Lake City, *Combs* 167; Old Town, *Combs* 855; Grasmere, *Combs* 1036, 1161; Gainesville, *Chase* 4251; Eustis, *Chase* 4072, 4077, *Hitchcock* 801, 813, *Nash* 36, 63, 132, 603, 628; Clearwater, *Tracy* 6700; Dunedin, *Tracy* 6725; Lakeland, *Hitchcock* 845.

143. Panicum commonsianum Ashe.

Panicum commonsianum Ashe, Journ. Elisha Mitchell Soc. **15:** 55. 1898. "Based on no. 341, Commons. Collected in drifting sands along the coast, Cape May, N. J., June, 1898." The type, in Ashe's herbarium, "Ex. Herb. A. Commons," consists of five tufts of vernal culms with mature primary panicles.

DESCRIPTION.

Vernal plants grayish olive, drying brownish; culms usually in dense tufts 20 to 50 cm. high, stiffly ascending or spreading, papillose-strigose to appressed-pilose, the hairs at the nodes more spreading; sheaths shorter than the internodes, strigose to appressed-pilose like the culms but less densely so; ligules 1 mm. long or less; blades firm, stiffly ascending, 5 to 8 (rarely 9) cm. long, 4 to 7 mm. wide, broadest near the rounded base, the serrulate, cartilaginous margin involute toward the acuminate apex, glabrous on the upper surface or with a few long hairs toward the base or margin, strigose on the lower surface or glabrous; panicles long-exserted, 4 to 8 cm. long, about as wide, loosely flowered, the axis and branches strigose to nearly glabrous, the branches stiffly spreading, spikelet-bearing toward the ends; spikelets 2.2 to 2.4 mm. long, 1.2 mm. wide, elliptic, subacute, pubescent; first glume about half as long as the spikelet, sometimes longer, usually pointed, 3-nerved; second glume slightly shorter than the fruit and sterile lemma at maturity; fruit 2 mm. long, 1 mm. wide, elliptic, subacute.

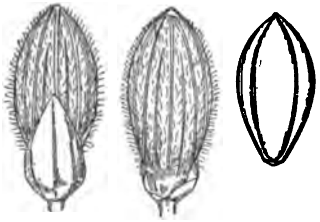


FIG. 259.—*P. commonsianum*. From type specimen.

Autumnal culms branching from the middle and upper nodes, after the maturity of the primary panicles becoming spreading or prostrate, the larger clumps forming mats in the sand, the reduced secondary subinvolute blades rather crowded, stiffly ascending, overtopping the panicles; winter blades lanceolate, commonly more hairy than those of the culm.

This species is variable as to pubescence.

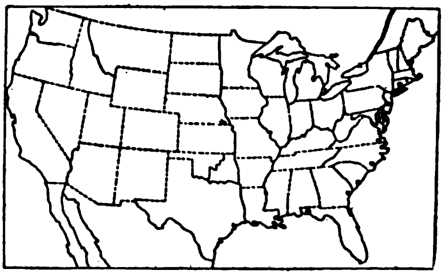


FIG. 260.—Distribution of *P. commonsianum*.

DISTRIBUTION.

Dunes and sandy woods near the coast, Connecticut to northern Florida.

CONNECTICUT: North Haven, *Andrews* in 1901; South Windsor, *Bissell* 12000.

NEW YORK: Lake Roukonkoma, *Bicknell*; Rockville Center, *Bicknell* in 1906; Valley Stream, *Bicknell* in 1905; Hempstead, *Bicknell* in 1903.

NEW JERSEY: South Amboy, *Mackenzie* 1485, 2155, 2165; East Plains, *Stone* 4, 6; Lakehurst, *Mackenzie* 2067; Toms River, *Bicknell* in 1900, *Chase* 3575; Forked River, *Chase* 3584, 3596; Atsion, *Chase* 3531, 3541, 3544, 3570; Cape May, *Canby* 4 in 1902, *Commons* 43, 341; Wildwood, *Chase* 3517½.

DELAWARE: Lewes, *Hitchcock* 408.

VIRGINIA: Region of Cape Henry, *Chase* 2349, 5428, *Hitchcock* 407, *Kearney* 1393, 1454, 1776, 2114, *Pollard & Maxon* in 1900.
NORTH CAROLINA: Wilmington, *Chase* 3161, 4601, *Hitchcock* 326, 336.
SOUTH CAROLINA: Isle of Palms, *Chase* 4544.
GEORGIA: Augusta, *Kearney* 209.
FLORIDA: East Pass, *Tracy* 9141.

144. **Panicum addisonii** Nash.

Panicum addisonii Nash, Bull. Torrey Club **25**: 83. 1898. "Collected by Mr. E. P. Bicknell in sandy soil at Wildwood, N. J., May 30 and 31, 1897." The type specimen, in Nash's herbarium, is the early branching form with culms 15 to 30 cm. high, mature primary panicles, and spikelets 2 to 2.1 mm. long.

Panicum owenae Bicknell, Bull. Torrey Club **35**: 185. 1908. "Type collected September 20, 1907, on the sandy commons west of the town [Nantucket], deposited in herb. N. Y. Bot. Garden." The type specimen is the autumnal form, the primary panicles destitute of spikelets, the secondary panicles among the crowded autumnal leaves. The blades are nearly smooth except for scattered long hairs near the margin. The vernal form collected by Bicknell at the type locality June 20, 1908, is more pubescent.

DESCRIPTION.

Vernal form similar to that of *P. commonsianum* and often closely resembling that species; culms more slender, rarely as much as 40 cm. high, appressed or ascending-pilose at least below, puberulent above; sheaths sparsely ascending-pilose; blades stiffly ascending, 4 to 7 cm. long, 3 to 6 mm. wide, involute-pointed, glabrous on the upper surface, sometimes with a few long hairs near the margin, pubescent or glabrous beneath; panicles long-exserted, 2 to 6 cm. long, two-thirds to three-fourths as wide, the stiff branches ascending, the panicle thus appearing more densely flowered; spikelets 2 to 2.1 mm. long, 1.1 mm. wide, obovate, blunt, papillose-pubescent, or the papillæ obscure; first glume one-third to half as long as the spikelet, usually pointed; second glume and sterile lemma barely equaling the fruit at maturity; fruit 1.7 mm. long, 1 mm. wide, elliptic, subobtuse.

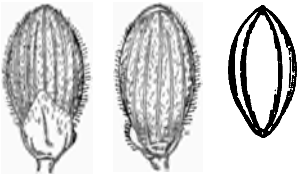


FIG. 261.—*P. addisonii.* From type specimen.

Autumnal form more or less spreading, rather freely branching from all the nodes, the branches appressed or narrowly ascending, the later branchlets somewhat fascicled, the stiff blades not greatly reduced, overtopping the numerous reduced panicles.

This species very closely approaches forms of *P. commonsianum*, the smaller, broader spikelets with shorter first glume affording about the only constant difference, though it is *P. commonsianum* rather than *P. addisonii* which varies much. The type of *P. owenae* and a specimen collected by Steele, Suitland, Maryland, in 1899, both late autumnal forms, have fascicled primary branches from the lower nodes. Usually only the secondary branchlets are fascicled. Two southern specimens, *Chase* 4580 and *Hitchcock* 557, have laxer culms and more spreading branches.

DISTRIBUTION.

Sand barrens, Massachusetts to South Carolina.

MASSACHUSETTS: Andover, *Blake* in 1882; Nantucket, *Bicknell* in 1907 and 1908.
CONNECTICUT: East Lyme, *Graves* in 1903 (Bissell Herb.).
NEW YORK: Hempstead, *Bicknell* in 1903 and 1906.
NEW JERSEY: Wildwood, *Bicknell* in 1897, *Chase* 3517; Wildwood Junction, *Chase* 3523; Toms River, *Bicknell* in 1900; Forked River, *Chase* 3583, 3595; Atsion, *Chase* 3538; Lakehurst, *Chase* 3574; Somers Point, *Canby* 5 in 1902; Tuckerton, *Chase* 3603.
MARYLAND: Chesapeake Beach, *Hitchcock* 1617; Suitland, *Steele* in 1899.

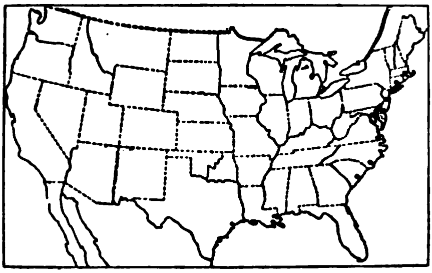


FIG. 262.—Distribution of *P. addisonii*.

VIRGINIA: Virginia Beach, *Hitchcock* 556 (Hitchcock Herb.).
NORTH CAROLINA: Wilmington, *Chase* 3166, 4580; *Hitchcock* 335, 399.
SOUTH CAROLINA: Orangeburg, *Hitchcock* 557.

145. Panicum wilmingtonense Ashe.

Panicum wilmingtonense Ashe, Journ. Elisha Mitchell Soc. **16**: 86. 1900. "The type material collected in May, 1899, on the sand hills near Wilmington, N. C., is preserved in my herbarium." The type, in Ashe's herbarium, is labeled, "Shady slopes on the sand hills one mile to north of Wilmington, May 17, 1899. W. W. Ashe, Collector." The plants are the vernal form with some autumnal culms of the preceding season attached.

Panicum alabamense Ashe, N. C. Agr. Exp. Sta. Bull. **175**: 116. 1900, not Trin. 1854. "Auburn, Ala., May 7, 1898. Number 1530, Alabama Biological Survey." The type, in Ashe's herbarium, is a tuft of young vernal culms, the panicles only partly exserted. Mounted on the sheet with this is a specimen of *P. lucidum*. Ashe's description refers to the latter only in so far as the spikelets are said to be glabrous.

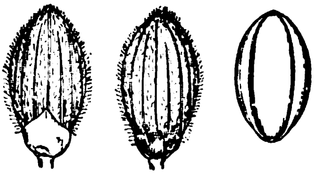


FIG. 263.—*P. wilmingtonense*. From type specimen.

DESCRIPTION.

Vernal form bluish green; culms solitary in small tufts; slender, erect from an ascending base 20 to 40 cm. high, pilose with soft, ascending hairs, the nodes pubescent with short, reflexed hairs; sheaths pubescent like the culms, densely villous-ciliate at the summit; blades rather stiff, ascending, 4 to 9 cm. long, 3 to 7 mm. wide, glabrous on the upper surface, softly pubescent to nearly glabrous beneath, strongly ciliate on margin near base, the thick cartilaginous margin white at least when dry; panicles 5 to 8 cm. long, the branches ascending; spikelets 2 mm. long, 1 mm. wide, elliptic, subacute, first glume one-fourth to one-third as long as the spikelet; second glume and sterile lemma pubescent, the glume slightly shorter than the fruit at maturity; fruit 1.7 mm. long, 1 mm. wide, elliptic, obtuse.

Autumnal form spreading, branching from the middle and upper nodes, the branches rather crowded, the reduced involute-pointed blades exceeding the ultimate panicles; blades of the winter rosette as much as 7 cm. (rarely 12 cm.) long.

DISTRIBUTION.

Sandy woods, North Carolina and Alabama; rare.

North Carolina: Wilmington, *Ashe* in 1899, *Hitchcock* 316; Jacksonville, *Chase* 3195.

Alabama: Auburn, Alabama Biological Survey, *Earle & Baker* 1530 in part, *Hitchcock* 1325; Gateswood, *Tracy* 8429.

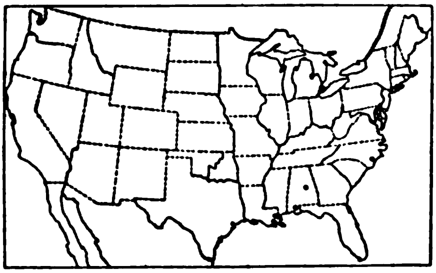


Fig. 264.—Distribution of *P. wilmingtonense*.

146. Panicum tsugetorum Nash.

Panicum tsugetorum Nash, Bull. Torrey Club **25**: 86. 1898. "Type material collected by the writer in the Hemlock Grove, New York Botanical Garden, on dry soil, June 22, 1896, no. 287." The type, in Nash's herbarium, consists of a clump of 8 vernal culms 20 to 37 cm. high, decumbent at base and bearing scarcely mature panicles. The culms are less stiff and the blades thinner than usual in this species, as the plants grew in the shade.

Panicum lanuginosum siccanum Hitchc. & Chase, Rhodora **8**: 207. 1906. "Type *Chase 1602*. Dry, hot sand of sandstone cliff. Starved Rock, Ill." This specimen, in the National Herbarium, is the early autumnal form, and represents an extremely hairy form of *P. tsugetorum*. The culms and sheaths are ascending-pilose and the blades are sparsely long-pilose on the upper surface.

DESCRIPTION.

Vernal plants usually pale bluish green; culms 30 to 50 cm. high, spreading or ascending, the lower nodes often geniculate, densely appressed-pubescent with short, crisp hairs, long hairs more or less copiously intermixed with these on the lower internodes or sometimes nearly to the summit; sheaths commonly not much shorter than the internodes, pubescent like the culm but less densely so, ascending-ciliate on the margin; ligules 1 to 1.5 mm. long; blades thickish, firm, with a thin white cartilaginous margin, ascending, 4 to 7 cm. long, 4 to 7 mm. wide, rounded at the base, acuminate, glabrous or with a few long hairs near the base on the upper surface, appressed-puberulent beneath; panicles 3 to 7 cm. long, nearly as wide, the axis and spreading, flexuous branches appressed crisp puberulent; spikelets 1.8 to 1.9 mm. long, 1 mm. wide, obovate-obtuse, rather turgid, short-pubescent; first glume one-third to two-fifths as long as the spikelet, acute; second glume and sterile lemma barely equaling the fruit at maturity; fruit 1.5 mm. long, 1 mm. wide, broadly elliptic, obtuse.

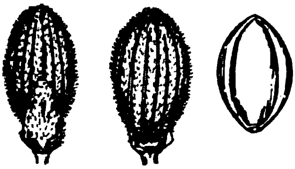


Fig. 265.—*P. tsugetorum*. From type specimen.

Autumnal form decumbent-spreading, branching from the lower and middle nodes often before the maturity of the primary panicles, the branches ascending, the ultimate branchlets appressed, the blades not greatly reduced nor crowded; winter rosette appearing rather early, the blades often conspicuously long-pilose.

In this species the blades are typically glabrous on the upper surface and the culms and sheaths are appressed-pubescent with short, crisp hairs, longer hairs intermixed on the lower internodes only, but numerous specimens have blades sparsely long-pilose on the upper surface and culms and sheaths ascending-pilose almost to the summit. This form is represented by the following specimens: MASSACHUSETTS: *Smith* 740; ONTARIO: *Macoun* 26236; NEW JERSEY: *Chase* 3579, 3608; INDIANA: *Chase* 1552; ILLINOIS: *Chase* 1602 (type of *P. lanuginosum siccanum* Hitchc. & Chase), 1604, 1605½; *Hill* 124 and 129 in 1905; MICHIGAN: *Morris* A240. *Hill* 124 and *Chase* 3608 are so strongly pilose as to resemble *P. implicatum*.

Two collections from Chesapeake Beach, *Chase* 3269 and 3270, seem to be intermediate between *P. tsugetorum* and *P. columbianum*, having the habit and pubescence of the former but spikelets only 1.7 mm. long.

DISTRIBUTION.

Sandy woods, Maine to Illinois, Virginia and Tennessee.

MAINE: North Berwick, *Parlin* 1215; Fayette, *Chase* 3390, 3399½; Chesterville, *Chase* 3321, 3363; Ogunquit, *Parlin* 1577.

VERMONT: Salisbury, *Brainerd* in 1903 (Gray Herb.).

MASSACHUSETTS: Framingham, *Smith* 740.

CONNECTICUT: South Manchester, *Hitchcock* 134; Southington, *Andrews* 62, 74, *Bissell* 5594, 5595, 5616.

RHODE ISLAND: Gloucester, *Collins* in 1908.

NEW YORK: Thousand Islands, *Bicknell* in 1905; Sylvan Beach, *House* 1287; Ausable Point, *Eggleston* 2843; Washington County, *Burnham* 19; Albany, *Peck* 6; Oneida Lake, *Coville* in 1887; Bronx Park, *Nash* 287; Woodmere, *Bicknell* in 1902 and 1906; Jamaica, *Bicknell* in 1904; Hempstead, *Bicknell* in 1903; Norwood, *Bicknell* in 1903; Rosedale, *Bicknell* in 1904; Valley Stream, *Bicknell* in 1904; Cedarhurst, *Bicknell* in 1902.

ONTARIO: Tilsonburg, *Macoun* 26236.

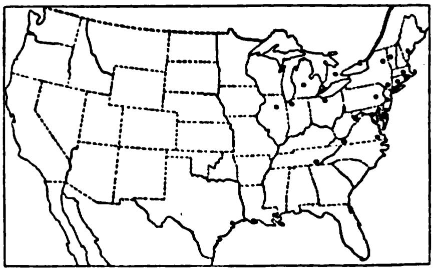


FIG. 266.—Distribution of *P. tsugetorum*.

NEW JERSEY: South Amboy, *Mackenzie* 1379, 2220; Tuckerton, *Chase* 3601, 3608, 3612; Atsion, *Chase* 3532, 3543, 3564; Forked River, *Chase* 3579; Wildwood Junction, *Chase* 3524.

PENNSYLVANIA: Tannersville, *Smith* 2.

OHIO: Defiance County, *Fullmer* in 1898 (Ohio State Univ. Herb.).

INDIANA: Dune Park, *Chase* 1921; Miller, *Chase* 1544, 1552; Gibson, *Bebb* 2939½, Steuben County, *Deam* in 1904.

ILLINOIS: Starved Rock, *Chase* 1602, 1604, 1605½, *Greenman, Lansing & Dixon* 155; Oregon, *Hill* 124 and 129 in 1905.

MICHIGAN: Port Huron, *Dodge* in 1909; Twin Lakes, *Wheeler* 22; Port Austin, *Morris* A240 in part.

DELAWARE: Point Lookout, *Canby* 9.

MARYLAND: Beltsville, *Chase* 3752; Riverdale, *Chase* 3642.

DISTRICT OF COLUMBIA: *House* 907, *Scribner* in 1894, *Ward* in 1878.

VIRGINIA: Patrick County, *Heller* 1312; Ocean View, *Kearney* 1447; Lee County, *Small* in 1892 (Gray Herb.).

WEST VIRGINIA: Harpers Ferry, *Hitchcock* 135.

TENNESSEE: Lookout Mountain, *Ruth* in 1899 (Hitchcock Herb.).

147. **Panicum columbianum** Scribn.

Panicum heterophyllum Bosc; Nees, Agrost. Bras. 227. 1829, not Spreng. 1822. Based on "Panicum heterophyllum Bosc, Herb. Willd." The type specimen, in the Willdenow Herbarium, labeled in Bosc's hand, is the vernal form.

Panicum columbianum Scribn. U. S. Dept. Agr. Div. Agrost. Bull. 7: 78. *f. 60.* 1897. "Dry sandy fields, meadows and open woodlands, New England and southward to the Carolinas, and westward to Tennessee and Alabama, mostly near the coast; also in California." The type, the specimen from which figure 60 is drawn, is in Hitchcock's herbarium. It is labeled as follows in Scribner's writing: "*Panicum columbianum* Scribn. (Type) Brookland, D. C., July 14, 1894. Coll. F. L.-S." The specimen consists of three branching culms, 25 to 38 cm. high, the primary panicles destitute of spikelets. A duplicate type is in the National Herbarium.

Panicum psammophilum Nash, Bull. Torrey Club **26**: 576. November, 1899, not Welw. July, 1899. "NEW JERSEY: * * * Toms River, July 25–31, 1898, *W. N. Clute*, no. 175 (type)." This specimen, in the herbarium of the New York Botanical Garden, consists of five branching culms, 15 to 40 cm. high, the primary panicles destitute of spikelets. The lower internodes are appressed-pilose, but otherwise the specimen is very similar to Scribner's type.

This species has been erroneously referred to *Panicum unciphyllum* Trin.[a] The specimen sent as a portion of the type from the Trinius Herbarium is *P. columbianum*, but a subsequent examination of Trinius's plants showed that there were two groups of specimens lying loose upon a single sheet, one group being the type of *P. unciphyllum* (*P. tenue* Muhl.), the other group being *P. columbianum*. A plant of the latter had been sent with a copy of the label of the former.

DESCRIPTION.

Vernal plants light grayish green, often purplish; culms tufted, 15 to 50 cm., rarely 60 cm., high, stiffly ascending, densely crisp-puberulent with long, ascending, crimped hairs commonly intermixed toward the base, but much less copiously than in *P. tsugetorum;* sheaths shorter than the internodes, less pubescent than the culms, sometimes puberulent between the nerves only; ligules less than 1 mm. long; blades firm, ascending or erect, 3 to 6 cm. long (seldom over 5 cm. long), 3 to 5 mm. wide, broadest at the rounded base, the serrulate, often white, cartilaginous margin usually involute toward the acuminate apex, typically glabrous on the upper surface but sometimes sparsely pilose toward the base, densely appressed-puberulent to glabrous beneath; panicles 2.5 to 4 cm. (rarely 5 cm.) long, about three-fourths as wide, the lower branches ascending, the axis and branches puberulent to nearly glabrous; spikelets 1.5 to 1.6 mm. long, 1 mm. wide, obovate, obtuse, turgid, densely short-pubescent; first glume one-third to scarcely half as long as the spikelet, acute or subacute; second glume and sterile lemma subequal, scarcely covering the fruit at maturity; fruit 1.3 mm. long, 0.9 mm. wide, broadly elliptic, obtuse.

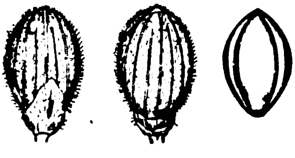


FIG. 267.—*P. columbianum.* From type specimen.

Autumnal culms branching from the middle and upper nodes at the maturity of the primary panicles, becoming widely spreading or decumbent at base, the early branches sometimes nearly equaling the primary culm, the ultimate branchlets in short, appressed fascicles, the crowded blades usually equaling or exceeding the reduced panicles; winter blades thickish, lanceolate, often sparsely pilose or ciliate.

Specimens of this species and the preceding often closely resemble each other, since both vary much in pubescence and somewhat in habit. *Panicum columbianum* is typically smaller, more slender and stiffer than *P. tsugetorum*, and the culms are densely crisp-puberulent with little of the pilose character of the latter. Occasional specimens, like *Bissell* 5596, *Chase* 3822, and *Graves* 10, are larger, laxer plants with appressed-pilose culms and are referred to *P. columbianum* because the spikelets are not over 1.6 mm. long.

---

[a] Hitchcock, Bot. Gaz. **41**: 66. 1906.

DISTRIBUTION.

Sandy woods or open ground, Maine to Virginia.[a]

Maine: North Berwick, *Parlin* 1196; York Harbor, *Bicknell* in 1896.

New Hampshire: Laconia, *Carter* in 1902 (Hitchcock Herb.).

Massachusetts: Wellesley, *Smith* 738; Framingham, *Smith* 742, 744.

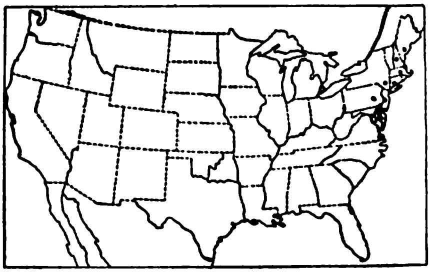


Fig. 268.—Distribution of *P. columbianum.*

Connecticut: Griswold, *Graves* 10; Waterford, *Graves* 83, 84; Southington, *Andrews* in 1902, *Bissell* 5596.

New York: Van Cortlandt Park, *Bicknell* in 1891; Rockville Center, *Bicknell* in 1903 and 1906; Cedarhurst, *Bicknell* in 1903; Hempstead, *Bicknell* in 1903; Jamaica, *Bicknell* in 1905.

New Jersey: Tuckerton, *Chase* 3606, 3613; Atsion, *Chase* 3533, 3539; Wildwood, *Chase* 3519; Toms River, *Clute* 175; Mount Arlington, *Mackenzie* 1399; Lakehurst, *Mackenzie* 2068; Chadwick, *Mackenzie* 2404; South Amboy, *Mackenzie* 2247; Sussex County, *Mackenzie* 2105.

Pennsylvania: Stroudsburg, *Porter* in 1898.

Maryland: Patuxent River, *Hitchcock* 1632; Chesapeake Junction, *Hitchcock* 2407, 2413; Beltsville, *Chase* 3794, 3832; West Chevy Chase, *Chase* 5427.

District of Columbia: *Chase* 5429, 5430, *Hitchcock* 2418, *Scribner* in 1894, *Williams* in 1896.

Virginia: Norfolk, *Vasey* in 1884 (Gray Herb.).

147a. Panicum columbianum thinium Hitchc. & Chase.

Panicum unciphyllum thinium Hitchc. & Chase, Rhodora **8**: 209. 1906. "Type *Chase* 3577 in National Herbarium. In mats, sandy, open ground, Tom's River, N. J., July 28, 1906; collected by Agnes Chase". The type consists of a tuft of many autumnal culms 12 to 20 cm. high, the spikelets 1.3 mm. long.

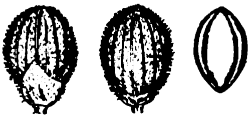


Fig. 269.—*P. columbianum thinium.* From type specimen.

Panicum columbianum thinium Hitchc. & Chase in Robinson, Rhodora **10**: 64. 1908. Based on *P. unciphyllum thinium* Hitchc. & Chase.

DESCRIPTION.

Vernal culms shorter and more slender than in *P. columbianum*, not over 30 cm. high, usually about 20 cm. high, densely tufted, the appressed pubescence longer, stiffer, and arising from minute papillæ; sheaths sparsely ascending pilose; blades rarely over 3 cm. long, sparsely pilose with long hairs on the upper surface at least near the margin and base, the long hairs sometimes mixed with appressed pubescence beneath; panicles 1.5 to 4 cm. long, about as wide; spikelets 1.3 to 1.4 mm. long, rounded obovate, very turgid, pubescent; second glume shorter than the fruit at maturity; fruit 1.1 mm. long, 0.8 mm. wide, obtuse.

---

[a] The extended range given with the original description was based on misidentification of various small specimens of *P. lindheimeri*, as shown by such specimens labeled by Scribner "*Panicum columbianum*" in the National Herbarium and in Hitchcock's herbarium.

Autumnal form widely spreading, the branches appearing earlier than in the species, shorter and usually more crowded and somewhat aggregated toward the summit.

A few specimens intermediate between the species and subspecies occur, as *Kearney* 10, District of Columbia, which has the habit and pubescence of the subspecies but spikelets 1.5 mm. long; *Chase* 3559, Atsion, New Jersey, and *Commons* 58, Rehoboth, Delaware, which have the stouter culms and crisped pubescence of the species but spikelets 1.4 mm. long. Short specimens with much crowded branches resemble *P. oricola*, from which they may be distinguished by the smaller spikelets and less dense pubescence.

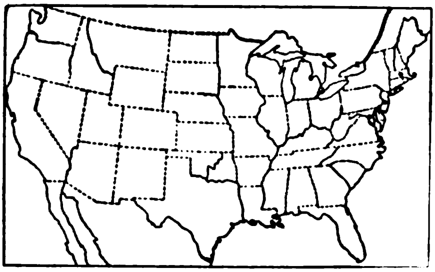


FIG. 270.—Distribution of *P. columbianum thinium*.

DISTRIBUTION.

Dry sands, Massachusetts to Virginia.

MASSACHUSETTS: Nantucket, *Bicknell* in 1899 and 1904.

NEW JERSEY: Mantoloking, *Lyon* in 1902; Atsion, *Chase* 3534, 3560, *Saunders & Clute* 2; Toms River, *Chase* 3577; Forked River, *Chase* 3588; Tuckerton, *Chase* 3605.

MARYLAND: Hyattsville, *Chase* 3806.

VIRGINIA: Lynn Haven, *Hitchcock* 406.

148. Panicum oricola Hitchc. & Chase.

Panicum oricola Hitchc. & Chase, Rhodora 8: 208. 1906. "Type *Hitchcock* 47 in National Herbarium. Prostrate clumps on bare sand on low mounds between marsh and sand dune. Lewes, Del., June 18, 1905, collected by A. S. Hitchcock." This specimen is the early autumnal form.

DESCRIPTION.

Vernal form grayish, often purplish; culms densely tufted, 10 to 30 cm. high, spreading, densely appressed or ascending pilose, the hairs on the nodes spreading; sheaths usually more than half the length of the internodes, appressed-pilose; ligules 1 to 1.5 mm. long; blades firm, erect or ascending, 2 to 5 cm. long, 2 to 4 mm. wide, broadest near the base, acuminate, the upper surface pilose with hairs 3 to 5 mm. long, the lower surface appressed-pubescent with longer hairs intermixed; panicles short-exserted, or rarely long-exserted early in the season, 1.8 to 3 cm. long, rarely longer, about two-thirds as wide, rather densely flowered, the axis appressed-pubescent, the flexuous branches ascending or spreading; spikelets 1.5 mm. long, 1 mm. wide, broadly obovate, turgid, obtuse, pubescent with short spreading hairs; first glume one-third to half the length of the spikelet, abruptly pointed; second glume and sterile lemma barely equaling the fruit at maturity; fruit 1.3 mm. long, 0.9 mm. wide, broadly elliptic, very turgid.

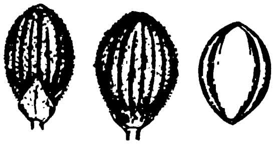


FIG. 271.—*P. oricola*. From type specimen.

Autumnal form prostrate, forming mats, with short, fascicled branches at all the nodes, the branches appearing before the maturity of the primary panicles; leaves and panicles not greatly reduced, the latter overtopped by the blades, which are less pilose than earlier ones; winter blades sparsely pilose above.

This species is more copiously pubescent than any other in this group and in this character resembles species of the Lanuginosa, but its affinity seems to be rather with the Columbiana.

DISTRIBUTION.

Sand barrens along the coast, Massachusetts to Virginia.

MASSACHUSETTS: Nantucket, *Bartlett* 1368, 1379, *Bicknell* in 1906, *Hitchcock* 558; Plymouth, *Oakes;* Quanquisset, *Bartlett* 1327.

CONNECTICUT: Groton, *Bissell* 9306 (Bissell Herb.).

NEW YORK: Northville, *Young* in 1871; West Rockaway, *Bicknell* in 1903; Lawrence, *Bicknell* in 1906; Hempstead, *Bicknell* in 1903; Woodmere, *Bicknell* in 1902; Rockville Center, *Bicknell* in 1906; Valley Stream, *Bicknell* in 1905.

NEW JERSEY: Absecum, *Commons* 45; Tuckerton, *Chase* 3609; East Plains, *Stone* 8; Atlantic City, *Parker;* Hammonton, *Canby* in 1902; South Amboy, *Mackenzie* 1355; Atsion, *Chase* 3562; Toms River, *Chase* 3576; Forked River, *Chase* 3581.

DELAWARE: Rehoboth, *Commons* 59, 60; Lewes, *Hitchcock* 47.

VIRGINIA: Ocean View, *Coville* 13, 14, *Kearney* 1461; Cape Henry, *Chase* 5431.

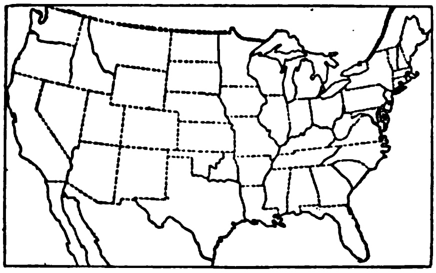


FIG. 272.—Distribution of *P. oricola.*

Sphaerocarpa.—Culms usually few in a tuft, rather stout, glabrous; ligules obsolete or nearly so; blades mostly thick and firm, cordate and ciliate at base, margins strongly cartilaginous; spikelets obovoid-spherical at maturity, oval when young, 1 to 1.8 mm. long, puberulent; second glume and sterile lemma 5 to 7-nerved; panicle branches mostly viscid. Autumnal form remaining simple or but sparingly branching, the thick, white-margined blades of the winter rosette conspicuous.

Culms spreading; blades obscurely nerved; panicle nearly as broad as long.
  Ligules obsolete or wanting; blades lanceolate..........149. *P. sphaerocarpon.*
  Ligules evident, 0.3 to 1 mm. long; margins of blades parallel for at least two-thirds their length........149a. *P. sphaerocarpon inflatum.*
Culms erect or ascending; blades rather strongly nerved; panicle never more than two-thirds as broad as long, usually less.
  Spikelets 1.5 to 1.6 mm. long; blades lanceolate, the upper not reduced................................150. *P. polyanthes.*
  Spikelets 1 to 1.2 mm. long; blades tapering from base to apex, the upper much smaller than the lower......151. *P. erectifolium.*

149. Panicum sphaerocarpon Ell.

Panicum sphaerocarpon Ell. Bot. S. C. & Ga. **1**: 125. 1816. "Grows in Georgia. Dr. Baldwin." The type, in the Elliott Herbarium, consists of a single plant with a mature, long-exserted panicle. The accompanying label reads: "Panicum sphaerocarpon Hab. Georg. Dr. Baldwin."

Panicum kalmii Swartz, Adnot. Bot. 6. 1829. "Hab. in America boreali (Pennsylvania?): Prof. Kalm." The type, labeled "Panicum Kalmii Swartz in Adnot. Bot. p. 6," in the Swartz Herbarium, is a single vernal plant.

Panicum heterophyllum Swartz, Adnot. Bot. 6. 1829, not Spreng. 1822. This is mentioned as a synonym of *P. kalmii* Swartz.

Panicum dichotomum sphaerocarpum Wood, Class-book ed. 3. 786. 1861. Presumably based on *P. sphaerocarpon* Ell., though the description hardly applies to this species.

Panicum nitidum crassifolium Gray; Doell in Mart. Fl. Bras. **2**^{2}: 247. 1877. This is described from a "specimen in New-Jersey lectum, n. 30." Doell's plant is evidently one of the specimens distributed by Gray in Gramineae and Cyperaceae **1**: no. 30. 1834, under the above name. The specimen in the Gray Herbarium bears the data "Hab.-Pine barrens of New-Jersey." This was not described by Gray. It represents the slender form of *P. sphaerocarpon.*

Panicum microcarpum sphaerocarpon Vasey, Grasses U. S. 12. 1883. Based on "*P. sphaerocarpon*, Ell."

Panicum vicarium Fourn. Mex. Pl. **2**: 20. 1886. Fournier cites only one specimen, "*Cordova* (SCHAFFN. n. 285)." The type is in the Paris Herbarium. This name was earlier listed by Hemsley[a] without description.

DESCRIPTION.

Vernal plants light green, in tufts of few to several culms, 20 to 55 cm. high, radiate-spreading, occasionally nearly erect, the nodes appressed-pubescent; sheaths nearly as long as or longer than the comparatively short internodes, loose toward the summit, ciliate on the margin, otherwise glabrous, sometimes with viscid tubercles between the nerves; ligules nearly or quite obsolete; blades thick and firm with usually inconspicuous nerves, ascending, 6 to 10 cm. long, 7 to 14 mm. wide (rarely longer or wider), the upper and lower smaller, acuminate, slightly narrowed to the subcordate base, rough on the upper surface, smooth below, the cartilaginous, scabrous margins stiffly ciliate toward the base; panicles long-exserted, 5 to 10 cm. long, nearly as wide, rather loosely flowered, the axis and ascending branches with viscid spots; spikelets 1.6 to 1.8 mm. long, 1 to 1.3 mm. wide (in exceptional specimens only 1.5 mm. long), obovoid-spherical at maturity (oval when young), puberulent; first glume about one-fourth the length of the spikelet, obtuse; second glume and sterile lemma equaling the fruit at maturity; fruit 1.4 to 1.5 mm. long, 1 to 1.2 mm. wide, obovoid-spherical.

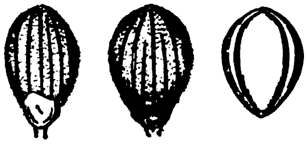


FIG. 273.—*P. sphaerocarpon.* From type specimen.

Autumnal form prostrate-spreading, sparingly branching late in the season from the base or lower and middle nodes, the branches short, mostly simple, the blades and panicles not greatly reduced; winter rosettes of many thick, ovate or ovate-lanceolate, white-margined leaves, appearing early.

Numerous specimens occur which are intermediate between this species and the following subspecies. These more slender plants with usually narrower blades and slightly smaller spikelets are the form named *Panicum nitidum* var. *crassifolium* by

---

[a] Biol. Centr. Amer. Bot. **3**: 498. 1885.

Gray[a] as shown by the specimen from "Pine barrens of New-Jersey," in the Boott set of the Gramineae and Cyperaceae now in the Gray Herbarium. This varietal name was never published by Gray and *P. nitidum* was included under *P. dichotomum* in Gray's Manual from the first to the fifth editions. In the sixth edition the name *P. nitidum* was applied to *P. sphaerocarpon* Ell., (which was cited as synonym) as shown by the description and by specimens in the Gray Herbarium. The intermediate specimens, of which the following are representative, are included in those cited below: *Ball* 69, *Bebb* 1259, *Chase* 3089, 3256, 3489, 3611, *Hitchcock* 1216, 1607, *Mackenzie* 2166, *Plank* 49, *Tracy* 13, 4607.

DISTRIBUTION.

Sandy soil, Vermont to northern Florida, west to Illinois and Texas, and south through Mexico to Venezuela.

Vermont: Putney, *Blanchard* 9 (Gray Herb.).

Massachusetts: Boston, *Swan* in 1886; Framingham, *Smith* 748.

Connecticut: Southington, *Andrews* 8, 73; Waterford, *Graves* 85; Berlin, *Bissell* 5585; Portland, *Wilson* 1435.

Rhode Island: Providence, *Olney* in 1868 (Brown Univ. Herb.).

New York: Niagara County, *Townsend* 1; Long Island, *Bicknell* in 1905.

New Jersey: Berkeley Heights, *Mackenzie* 2250; Tuckerton, *Chase* 3611; Wildwood, *Chase* 3489, 3509; Cape May, *Pollard* in 1897; South Amboy, *Mackenzie* 2166.

Pennsylvania: Easton, *Porter* in 1893 and 1897; Stroudsburg, *Porter* in 1898; Germantown, *Stone* 6; Newtown, *Smith* 160.

Ohio: Portsmouth, *Kellerman* in 1899 (Ohio State Univ. Herb.).

Indiana: Dune Park, *Chase* 1850, *V. H. Chase* 242.

Illinois: Jackson, *French* in 1906.

Michigan: Detroit, *Farwell* 1388; Grand Beach Springs, *Hill* 88 and 90 in 1908; Magician Lake, *Umbach* 2153.

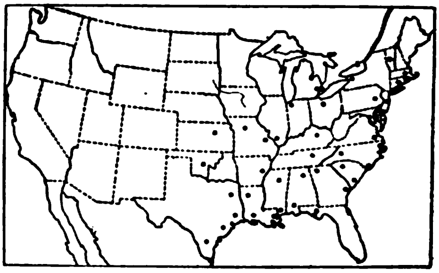


Fig. 274.—Distribution of *P. sphaerocarpon*.

Missouri: St. Louis, *Eggert* 254; Cliff Cave, *Kellogg* 9, 11; Swan, *Bush* 675; Eagle Rock, *Bush* 145.

Kansas: Cherokee County, *Hitchcock* Pl. Kans. 883.

Delaware: Centerville, *Commons* 284, 298; Milton, *Commons* 350; Rehoboth, *Commons* 49, 50; Lewes, *Hitchcock* 561.

Maryland: Chesapeake Beach, *Chase* 3256, *Hitchcock* 1605, 1607, 1615, 1616, 2408; between Chesapeake Beach and Chesapeake Junction, *Hitchcock*, 1626, 1639.

District of Columbia: *Ball* 65, *Chase* 2401, 2412, *Kearney* 12, *Pollard* 398, *Vasey* 34, 111, *Ward* in 1878, *Williams* 1, 2.

Virginia: Alexandria, *House* 1058, *Chase* in Kneucker Gram. Exs. 553; Four-Mile Run, *Chase* 5432, 5433; Norfolk County, *Chase* 2332, *Kearney* 301 in part, 1560; Munden, *Mackenzie* 1663; Virginia Beach, *Williams* 3098.

North Carolina: Roanoke Island, *Chase* 3212, 3237; Lake Mattamuskeet, *Chase* 3206; Wilmington, *Chase* 4591, *Hitchcock* 1426; Chapel Hill, *Chase* 3074; Caraleigh Junction, *Chase* 3089; Biltmore, *Biltmore Herb.* 4292b.

---

[a] Gram. & Cyp. 1: no. 30. 1834.

SOUTH CAROLINA: Orangeburg, *Hitchcock* 1381; Pacolet, *House* 2492; Clemson College, *House* 2413; Aiken, *Kearney* 243, *Ravenel*.

GEORGIA: Augusta, *Cuthbert* 1157, 1158; *Kearney* 217; Lookout Mountain, *Ruth* 1, 6, 75; Union, *Harper* 1087; Millen, *Curtiss* 6828; Thomson, *Bartlett* 1459.

FLORIDA: Monticello, *Combs* 306; St. Andrews Bay, *Tracy* 9137.

KENTUCKY: Bell County, *Kearney* 594.

TENNESSEE: Cocke County, *Kearney* 968.

ALABAMA: Pisgah, *Chase* 4470; Valley Head, *Ruth* 21; Tuskegee, *Carver* 28, 67; Cullman County, *Eggert* 13, 23; Anniston, *Tracy* 7402; Mobile, *Kearney* 25; Springhill, *Langlois* 43.

MISSISSIPPI: Starkville, *Tracy* 47; Jackson, *Hitchcock* 1307; Enterprise, *Tracy* 3296 in part; Biloxi, *Hitchcock* 1078, 1084, *Kearney* 320, *Tracy* 4576, 4597; Ocean Springs, *Tracy* 13; Mississippi City, *Hitchcock* 1095, 1099, 1102; Moss Point, *Tracy* 4604; Cat Island, *Tracy* 433; Petit Bois Island, *Tracy* 4607.

ARKANSAS: Little Rock, *Coville* in 1887; Miller County, *Eggert* 115; Benton County, *Plank* 49, 99.

LOUISIANA: Calhoun, *Ball* 69; *Hitchcock* 1284; Shreveport, *Hitchcock* 1241; Breton Island, *Tracy & Lloyd* 468; Lake Charles, *Hitchcock* 1126, 1132, 1134, 1136, 1137.

TEXAS: Waller County, *Hitchcock* 1181, 1190, 1213, 1216, *Thurow* 2, 4, 10, 30; Houston, *Bebb* 1259; *Hall* 832; Denison, *Bebb* 1434; Terrell, *Warburton* 12; Columbia, *Bush* 177; Weatherford, *Tracy* 7946; Victoria, *Plank* 4; Milano, *Griffiths* 6551; Galveston, *Plank* 34.

OKLAHOMA: Sapulpa, *Bush* 1218; Stillwater, *Hitchcock* 562.

MEXICO: San Luis Potosí, *Schaffner* 1037; Jalapa, *Pringle* 7883 (Hitchcock Herb.) 8344; Chinantla, *Liebmann* 327; Orizaba, *Botteri*; *Schiede & Deppe* "acuminatum b" (Berlin Herb.), *Schaffner* 138 (Paris Herb.); Córdoba, *Schaffner* 285 (Paris Herb.).

GUATEMALA: Coban, *Tuerckheim* 56 in part; crater of Pacaya Volcano, *Kellerman* 6236.

COSTA RICA: Abejonal, *Tonduz* 7878; San Pedro de la Calabaza, *Tonduz* 10745 in part; Copey, *Tonduz* 11866.

VENEZUELA: *Fendler* 1638.

149a. Panicum sphaerocarpon inflatum (Scribn. & Smith) Hitchc.

Panicum inflatum Scribn. & Smith, U. S. Dept. Agr. Div. Agrost. Circ. **16**: 5. 1899. "Type No. 4622, S. M. Tracy, collected at Biloxi, Miss., October, 1898." The type, in the National Herbarium, is a branching plant, decumbent and rooting at the lower nodes, the loose sheaths prominently tuberculate, the loosely flowered panicles mature.

Panicum mississippiense Ashe, Journ. Elisha Mitchell Soc. **16**: 91. 1900. "Collected by me on the banks of the Mississippi River below New Orleans in October. I also refer here S. M. Tracy's No. 6777, collected on Horne Island, Miss., in July, 1899." The type specimen could not be found in Ashe's Herbarium. According to Tracy the number of the second specimen mentioned is a misprint for 6471. This specimen is in Ashe's herbarium. The culms are in the early branching state, slender and widely spreading, the branches elongated.

DESCRIPTION.

Vernal form similar to that of the species, more ascending, not radiate-spreading; culms on the average taller, more slender; sheaths rather looser, more commonly and prominently viscid-tuberculate; ligules 0.3 to 1 mm. long; blades narrower, 5 to 10 mm. wide, the margins nearly parallel for two-thirds their length, with fewer ciliæ at the base; panicles more loosely flowered; spikelets slightly smaller, 1.4 to 1.5 mm. long, 1 mm. wide.

Autumnal form decumbent, rather freely branching from the middle nodes before the maturity of the primary panicles, these early branches long and again branching more freely than in the species, the ultimate blades and panicles not greatly reduced.

This subspecies is distinguished by the ligules, slightly smaller spikelets, and narrower, parallel-margined blades, taken in combination, and in autumnal specimens by the more freely branching habit. The specimens cited below all show this combination of characters, but about half as many specimens occur which are intermediate between this and the species. These bear a general resemblance to the subspecies, having spikelets about 1.5 mm. long, and narrower, but not always parallel-margined blades, but with no ligule or the merest trace of one. Because of the large proportion of these intermediate specimens *P. inflatum* Scribn. & Smith is here reduced to a subspecies of *P. sphaerocarpon.*

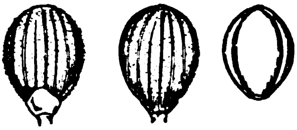


FIG. 275.—*P. sphaerocarpon inflatum.* From type specimen.

DISTRIBUTION.

Moist sandy ground, Maryland to Florida, and west along the Gulf to Texas, thence north to Missouri.

MISSOURI: Monteer, *Bush* 747 in part, 753.

MARYLAND: Owings, *Hitchcock* 1618; Chesapeake Junction, *Hitchcock* 2412.

NORTH CAROLINA: Wilmington, *Chase* 3134, 3158.

SOUTH CAROLINA: Orangeburg, *Hitchcock* 26.

GEORGIA: Savannah, *Kearney* 188, 194; Americus, *Tracy* 3642; Thomasville, *Tracy* 3656.

FLORIDA: Lake City, *Combs* 182; Quincy, *Combs* 403, 406; St. Vincent, *Tracy* 6458.

ALABAMA: Selma, *Kearney* 7; Fort Morgan, *Tracy* 8400.

MISSISSIPPI: Biloxi, *Tracy* 4593, 4622; Centerville, *Tracy* 3619; Horn Island, *Tracy* 2862, 6471.

LOUISIANA: Calhoun, *Hitchcock* 1285; Alexandria, *Ball* 441, 536; Calcasieu, *Cocks* 3007; Lake Charles, *Chase* 4429.

TEXAS: Without locality, *Nealley* in 1890.

OKLAHOMA: Poteau, *Hitchcock* in 1903 (Hitchcock Herb.).

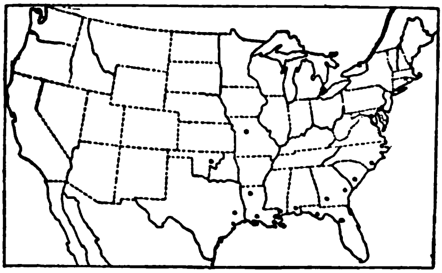


FIG. 276.—Distribution of *P. sphaerocarpon inflatum.*

150. Panicum polyanthes Schult.

Panicum multiflorum Ell. Bot. S. C. & Ga. 1: 122. 1816, not Poir. 1816. Elliott gives no exact locality, but his specimen was presumably from the vicinity of Charleston as he merely states, "Grows in shaded, dry soils." The type, in the Elliott Herbarium, consists of a single culm, lacking base, bearing three leaves and an immature panicle, slightly included at base. The accompanying label reads: "Panicum multiflorum mihi. Hab. in umbrosis. Flor. May-Jun."

Panicum microcarpon Muhl. Descr. Gram. 111. 1817, not Muhl.; Ell. 1816.[a] "Semina e Virg. et Cherokee et Delaware." The type in the Muhlenberg Herbarium consists of the upper portion of a culm with two leaves and a short-exserted panicle. The attached label reads: "40, c Jul. 12. e Cherokee."

Panicum polyanthes Schult. Mant. **2**: 257. 1824. Based on *P. multiflorum* Ell. not Poir. That Poiret's use of the name was earlier is given on the authority of Sprengel.[b]

Panicum microcarpon isophyllum Scribn. Tenn. Agr. Exp. Sta. Bull. **7**: 51. *f. 54.* 1894. No specimen is cited but in the Scribner Herbarium is a sheet to which is attached a note from Dr. Chapman suggesting the name "isophyllum" and upon which are four small specimens of *P. polyanthes* one of which is recognized as the plant figured with the original description. The specimens were collected by E. E. Gayle, Alleghany Springs, Blount Co., Tennessee, August, 1890.

DESCRIPTION.

Vernal plants light green, in tufts of few to several culms, 30 to 90 cm. high, stout, erect, the nodes glabrous or nearly so; sheaths long, usually overlapping, finely ciliate on the margin, otherwise glabrous; ligules obsolete or wanting; blades rather thin, prominently nerved, ascending, 12 to 23 cm. long, 15 to 25 mm. wide, the upper seldom reduced, long-acuminate, scarcely narrowed toward the cordate base, rough or smooth on the upper surface, smooth below, the cartilaginous, scabrous margin ciliate toward the base; panicles exserted, 8 to 25 cm. long, one-fourth to half as wide, densely flowered, the lower branches narrowly ascending, often distant, the upper fascicled, spikelet-bearing to the base; spikelets 1.5 to 1.6 mm. long, 1 to 1.1 mm. wide, obovoid-spherical at maturity, minutely puberulent; first glume one-third to two-fifths the length of the spikelet, obtuse or obscurely pointed; second glume and sterile lemma equaling the fruit at maturity; fruit obovoid-spherical.

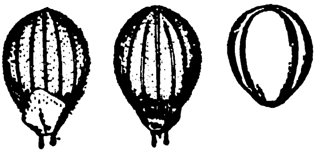


FIG. 277.—*P. polyanthes.* From type specimen of *P. multiflorum* Ell.

Autumnal form remaining erect and simple or producing from the lower or middle nodes simple branches with smaller blades and panicles; winter rosettes like those of *P. sphaerocarpon*, but the leaves larger.

This species is distinguished from *P. sphaerocarpon* by its erect habit, taller, more leafy culms, wider blades and narrow panicles. Specimens not infrequently occur in which, from a twisting of the internodes, the blades are all or mostly on one side. This is especially true of small, late culms. It was to such a specimen the name *P. microcarpon isophyllum* was given.

DISTRIBUTION.

Damp ground, woods and openings, New Jersey to Oklahoma, south to Georgia and Texas.

NEW JERSEY: South Amboy, *Mackenzie* 1380.
PENNSYLVANIA: Lancaster County, *Heller* 4772, *Porter* in 1898.
OHIO: Lancaster, *Kellerman* 6767.
INDIANA: Clarke County, *Deam* 5392; Batesville, *Deam* 6815.
ILLINOIS: Cobden, *Earle* in 1886; Jackson County, *French* in 1905.
MISSOURI: St. Louis, *Eggert* 250; Pleasant Grove, *Bush* 232.

---

[a] See discussion under *P. microcarpon* Muhl.; Ell., page 181.

[b] Neu. Entd. **2**: 190. 1821.

DELAWARE: Wilmington, *Commons* 307; Townsend, *Canby* in 1896; Ogletown, *Commons* 47; Stanton, *Commons* 306.

MARYLAND: Chesapeake Beach, *Hitchcock* 1609; Chesapeake Junction, *Hitchcock* 2399; Riverdale, *Chase* 2368; Hyattsville, *Chase* 3803, *House* 450; West Chevy Chase, *Chase* 3273.

DISTRICT OF COLUMBIA: *Ball* 21, 705, *Chase* in Kneucker Gram. Exs. 554, *Hitchcock* 2404, *Kearney* 13, 20, *Merrill* 199, *Pollard* 401, *Vasey* 110, *Ward* in 1880.

VIRGINIA: Four-Mile Run, *Steele* in 1897; Munden, *Mackenzie* 1745; Ocean View, *Kearney* 1476; Suffolk, *Heller* 968; Norfolk, *Hitchcock* 410.

WEST VIRGINIA: Baileysville, *Morris* 1186.

NORTH CAROLINA: West Raleigh, *Coit* 1300; Chapel Hill, *Ashe;* Caldwell County, *Small & Heller* 463; Hickory, *Small & Heller* in 1891.

SOUTH CAROLINA: Abbeville, *Maier* 264 (Gray Herb.).

GEORGIA: Lookout Mountain, *Ruth* 5, 7, 15, 69; Stone Mountain, *Small* in 1893; Clarke County, *Harper* 104; Cobb County, *Wilson* 8; Thomson, *Bartlett* 1071, 1498, 1500.

KENTUCKY: Harlan County, *Kearney* 52.

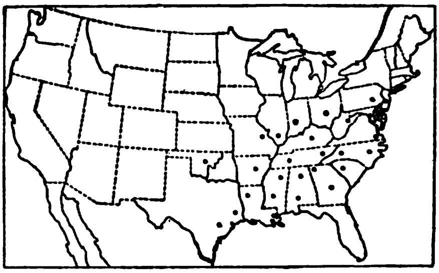


FIG. 278.—Distribution of *P. polyanthes*.

TENNESSEE: Robertson County, *Eggert* 95; Cocke County, *Kearney* 974; Chester County, *Bain* 191; White Cliff Springs, *Scribner* in 1890.

ALABAMA: Cullman County, *Eggert* 14; Pisgah, *Chase* 4485; Nesheka, *Carver* 18.

MISSISSIPPI: Taylorville, *Tracy* 8418; Heidelberg, *Tracy* 3316; Centerville, *Tracy* 3631; Macon, *Tracy* 3238; Starkville, *Kearney* 57 in part; without locality, *Tracy* 3760.

ARKANSAS: Greene County, *Eggert* 240; Prescott, *Bush* 255.

LOUISIANA: Calhoun, *Hitchcock* 1270.

TEXAS: Palestine, *Plank* 89; Burnet, *Plank* 9; without locality, *Nealley* in 1884 and 1886.

OKLAHOMA: Poteau, *Hitchcock* in 1903 (Hitchcock Herb.).

151. **Panicum erectifolium** Nash.

Panicum sphaerocarpon floridanum Vasey, U. S. Dept. Agr. Div. Bot. Bull. **8**: 33. 1889, not *P. floridanum* Trin. 1835. "Florida." In the National Herbarium are three specimens from Florida marked in Dr. Vasey's writing "Panicum sphaerocarpon Ell. var. Floridanum." Of these *Curtiss* 3599, from "Moist pine barrens, Mosquito Inlet, Florida, May, 1879," has been chosen as the type, since with the other two no locality within the State is given. This specimen consists of two plants 45 and 50 cm. high, with mature panicles of densely puberulent spikelets.

Panicum erectifolium Nash, Bull. Torrey Club **23**: 148. 1896. Based on *P. sphaerocarpon floridanum* Vasey, not *P. floridanum* Trin.

Panicum floridanum Chapm. Fl. South. U. S. ed. 3. 585. 1897, not Trin. 1835. "In and around shallow ponds, near the coast of West Florida." The type, in the Chapman Herbarium at Biltmore, is from Apalachicola. Chapman presumably intended to base his name upon *P. sphaerocarpon floridanum* Vasey, but cites "(*P. microcarpon*, var., Vasey. *P. sphaerocarpum*, Flora.)"

DESCRIPTION.

Vernal plants dull green, sometimes bluish, in tufts of few to several culms, 30 to 70 cm. high, erect or ascending, usually stout, glabrous, including the nodes; sheaths, except the uppermost, short, rather loose, usually crowded and overlapping at base, ciliate on the margin, otherwise glabrous; ligules about 0.3 mm. long; blades thick and firm with inconspicuous veins, ascending or erect, 7 to 13 cm. long, 6 to 12 mm. wide, the crowded lower ones usually much larger than the others, these successively smaller upward, tapering from the cordate base to the acuminate apex, smooth on both surfaces, margins scabrous, stiffly ciliate toward the base; panicles exserted, 6 to 12 cm. long, half to two-thirds as wide, densely flowered, the lower branches usually narrowly ascending; spikelets 1 to 1.2 mm. long, 0.8 to 1 mm. wide, broadly ovate or subspherical, densely puberulent; first glume one-fifth to one-fourth the length of the spikelet; obtuse, second glume and sterile lemma equaling the fruit at maturity; fruit oval, very obscurely umbonate.

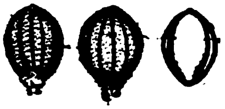


FIG. 279.—*P. erectifolium.* From type specimen.

Autumnal form remaining erect and simple or late in the season producing branches from the third or fourth node, the branches nearly as long as the primary culm, rarely again branching; winter rosettes appearing late, the blades 3 to 10 cm. long.

This species shows an unusual variation in the size of the blades and also the number of leaves to the culm. There are usually 5 to 7, but sometimes as many as 10 leaves, and in a few specimens no blades are over 5 cm. long. The specimens of *Combs* 553 are small autumnal plants more freely branching than usual.

DISTRIBUTION.

Moist pine barrens, swamps, and borders of ponds, North Carolina to Florida and Louisiana; also in Cuba.

NORTH CAROLINA: Wilmington, *Chase* 3137, *Hitchcock* 411; without locality, *McCarthy* in 1885.

GEORGIA: Allapaha, *Curtiss* 6817 in part; Huntington, *Harper* 1394; Charlton County, *Harper* 1485.

FLORIDA: Jacksonville, *Curtiss* 4812 (Hitchcock Herb.); Baldwin, *Combs* 58; Lake City, *Combs* 114; De Funiak Springs, *Combs* 467; Washington County, *Combs* 553, 662; Ellzey, *Combs* 814; Mosquito Inlet, *Curtiss* 3599; Grasmere, *Combs* 1117; Eustis, *Nash* 1012; Manatee River, *Rugel* 229; Orange Glade, *Eaton* 578; Myers, *Chase* 4154, *Hitchcock* 874, Lee Co. Pl. 469.

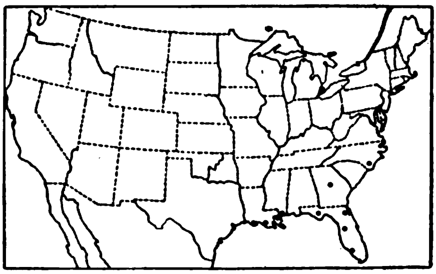


FIG. 280.—Distribution of *P. erectifolium.*

MISSISSIPPI: Beauvois, *Tracy* 4596.

LOUISIANA: St. Tammany Parish, *Cocks* 292 (Hitchcock Herb.).

CUBA: Vuelta Abajo, *Wright* 3462.

Ensifolia.—Plants low and slender, usually glabrous and less than 50 cm. high; sheaths glabrous or puberulent (sparsely pilose in *P. curtifolium*); ligules nearly obsolete (about 1 mm. long in *P. curtifolium*); panicles small, rarely more than 5 cm. long; spikelets glabrous or pubescent, 1 to 1.7 mm. long, 5 to 7-nerved. Autumnal form sparingly to freely branching, or in *P. vernale* a distinct autumnal form wanting.

- Ligules about 1 mm. long; sheaths or some of them sparsely spreading-pilose....................................159. *P. curtifolium.*
- Ligules obsolete or nearly so; pubescence if present not spreading.
  - Blades prominently white-margined, firm; spikelets densely puberulent.
    - Blades puberulent beneath, often above; sheaths and sometimes lower internodes ascending pubescent ....152. *P. tenue.*
    - Blades glabrous; sheaths glabrous or minutely ciliate only.
      - Uppermost culm blades much reduced; culms branching from lower nodes only, the branches repeatedly branching...........153. *P. albomarginatum.*
      - Uppermost culm blades about as long as the others; culms bearing short branches from the upper and middle nodes ....154. *P. trifolium.*
  - Blades not white-margined or very obscurely so (or if white margin is evident spikelets only 1.1 mm. long); spikelets glabrous or puberulent.
    - Culms branching only at base; plants soft, light green.158. *P. vernale.*
    - Culms branching at the nodes; plants firm or at least not soft.
      - Spikelets glabrous.
        - Spikelets 1.1 to 1.2 mm. long; blades rarely as much as 5 cm. long................160. *P. chamaelonche.*
        - Spikelets 1.2 to 1.5 mm. long.
          - Blades elongated, at least some of them 8 to 10 cm. long..................161. *P. glabrifolium.*
          - Blades not over 3 cm. long.............157. *P. ensifolium.*
      - Spikelets puberulent.
        - Spikelets 1.1 mm. long; winter blades bluish green, not glossy.....................156. *P. concinnius.*
        - Spikelets 1.3 to 1.5 mm. long.
          - Blades involute, falcate, with long stiff hairs on margin near base; plants stiff and wiry....................162. *P. breve.*
          - Blades not involute, or at tip only, not falcate.
            - Plants bright green; winter blades conspicuous, glossy green.....155. *P. flavovirens.*
            - Plants olive; winter blades not conspicuous nor glossy..........157. *P. ensifolium.*

152. Panicum tenue Muhl.

Panicum tenue Muhl. Descr. Gram. 118. 1817. No locality is given. "*P. deustum* Brickell et Enslin," an unpublished name, is cited as synonym. The type, in the Muhlenberg Herbarium, consists of three plants with attached label bearing the name "*Panicum deustum*;" these are from 10 to 30 cm. high, the panicles immature, the sheaths sparsely appressed-pilose, the blades puberulent on the lower surface and with conspicuous white margins.

Panicum deustum Brickell & Enslin; Muhl. Descr. Gram. 119. 1817, not Thunb. 1794. This herbarium name is given as a synonym of *P. tenue*, of which it is a typonym.

Panicum liton Schult. Mant. **2**: 250. 1824. Based on *P. tenue* Muhl., Muhlenberg's description, slightly rearranged, being copied, "Nomina mutanda, ob *tenue* Roxb. et *deustum* Thunb. antiquiora." *Panicum tenue* Roxb. 1813,[a] is a nomen nudum, the description not being published until 1820.[b]

Panicum unciphyllum Trin. Gram. Pan. 242. 1826. Trinius states in regard to his specimen, "V. spp. Am. Bor. (TRATTINICK)." The type, in the Trinius Herbarium, is the vernal form, with sparsely appressed-villous culms and sheaths and puberulent blades. As stated under *P. columbianum*, Trinius's species was misunderstood because the specimen sent from St. Petersburg as a part of the type proved on a subsequent examination of Trinius's herbarium to be not the type but a specimen of *P. columbianum* which was on the same sheet with the type specimen. The label accompanying the latter reads, "Panicum unciphyllum m. Pan. heterophyllum Muhl. (teste Nees) an Pluckn. Tav. 92 f. 8, ex herb. Enslini, spmna Am. bor. Trattinick."

Panicum macrum Kunth, Rév. Gram. **1**: 40. 1829. Based on *P. tenue* Muhl., the name presumably changed because of *P. tenue* Roxb.

Panicum parvulum Muhl.; Scribn. & Merr. U. S. Dept. Agr. Div. Agrost. Circ. **27**: 4. 1900, not Trin. 1834. This name, found in Muhlenberg's herbarium, is given as a synonym of *P. tenue*.

DESCRIPTION.

Vernal form olive green; culms in rather small tufts, 20 to 55 cm. high, slender, erect from a more or less geniculate base, glabrous, or the lower internodes sparsely appressed-pubescent, the nodes glabrous, appressed-pubescent, or appressed-pilose; sheaths usually much shorter than the internodes, puberulent between the nerves to sparsely appressed-pilose, or the upper glabrous; ligules 0.3 to 0.5 mm. long, dense; blades distant, ascending or speading, 2 to 5 cm. long, 3 to 4 mm. wide, rather thick and with a cartilaginous, often white, margin, involute-pointed, usually densely puberulent beneath, glabrous on the upper surface or puberulent toward the base; panicles long-exserted, 3 to 5 cm. long, about as wide, pyramidal, open, rather few-flowered, the flexuous branches spreading; spikelets 1.6 to 1.7 mm. long, elliptic, subobtuse, densely puberulent; first glume one-fifth as long as the spikelet or less, obtuse; second glume shorter than the fruit and sterile lemma; fruit 1.4 to 1.5 mm. long, elliptic, subobtuse.

Autumnal culms erect or leaning, sparingly branching from the middle nodes, the branches in small fascicles, shorter than the primary internodes, the blades not much reduced; winter rosette conspicuous, the thick, cartilaginous-margined, involute-pointed blades 3 to 5 cm. long, 4 to 7 mm. wide, persistent (but usually dead) during the succeeding year.

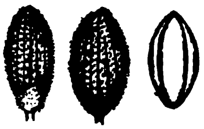


FIG. 281.—*P. tenue*. From type specimen.

This species seems to be intermediate between *P. albomarginatum* and *P. ensifolium*, differing from the first in being pubescent and in having taller, more slender culms, sparingly branched. From *P. ensifolium* it may be distinguished by the larger, more pubescent spikelets, the thicker, involute-pointed blades and the large basal rosette of firm leaves. In *Hitchcock* 1438, from Wilmington, N. C., referred here, the pubescence is so copious as to suggest *P. leucothrix*, but the nearly obsolete ligule and the size of the spikelets place it, though somewhat doubtfully, in *P. tenue*. Hitchcock's no. 1467 is an unusually robust specimen with panicles as much as 9 cm. long.

---

[a] Cat. Fl. Ind. 1813. [b] Roxb. Fl. Ind. 1: 313. 1820.

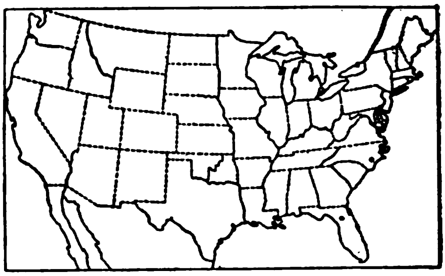


FIG. 282.—Distribution of *P. tenue*.

DISTRIBUTION.

Moist sandy woods, eastern North Carolina and northern Florida.

NORTH CAROLINA: Parmele, *Ashe* in 1899; Manteo, *Ashe* in 1898; Wards Mill, *Chase* 3170, 3172, 3183; Wilmington, *Ashe* in 1899, *Hitchcock* 332, 1467.

FLORIDA: Lake City, *Bitting* 20.

153. Panicum albomarginatum Nash.

Panicum albomarginatum Nash, Bull. Torrey Club **24**: 40. 1897. "Collected by the writer in low pine land at Eustis, Lake County, Florida, early in June, 1894, no. 925." The type, in Nash's herbarium, consists of two large tufts in the early branching state, the culms 15 to 28 cm. high, the primary panicles devoid of spikelets.

DESCRIPTION.

Vernal plants usually grayish green, often purplish; culms densely tufted, 15 to 40 cm. high (rarely taller), slender but firm, ascending or spreading, glabrous including the nodes; leaves crowded at the base, distant above, sheaths sometimes pubescent on the margin and at the summit, otherwise glabrous, or the lowermost sometimes obscurely pubescent; ligules 0.3 mm. long, dense; blades firm, those of the midculm 4 to 6 cm. long, 4 to 6 mm. wide, rounded at the base, thick and firm, with a prominent white, finely serrulate, cartilaginous margin, ascending or spreading, glabrous, the crowded basal blades as much as 11 cm. long, and the uppermost blade usually much reduced; panicles finally long-exserted, 3 to 6 cm. long, nearly as wide, rather densely flowered, the flexuous branches ascending or spreading; spikelets 1.4 to 1.5 mm. long, 0.7 mm. wide, obovate-elliptic, subobtuse, turgid at maturity, densely puberulent; first glume one-fifth to one-fourth as long as the spikelet, obtuse or subacute; second glume and sterile lemma scarcely equaling the fruit at maturity; fruit 1.25 mm. long, 0.65 mm. wide, elliptic, subacute.

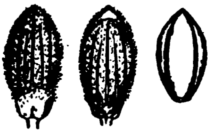


FIG. 283.—*P. albomarginatum*. From type specimen.

Autumnal form spreading, the primary culms branching from the base and lower nodes, these early branches much longer than the primary internodes and repeatedly branching, forming bushy tufts, the ultimate branchlets and reduced blades appressed; winter blades stiffly erect or spreading, very smooth and firm.

This species is distinguished by the long crowded basal and distant upper blades, the uppermost usually less than half as long as those of the midculm; and by the autumnal form in which the primary culms branch from the basal and lower, never from the upper, nodes.

The specimens collected by Hitchcock in Cuba (no. 555) are robust plants and differ from typical *P. albomarginatum* in having a ligule 1 mm. long.

DISTRIBUTION.

Low sandy soil of the Coastal Plain, from southeastern Virginia to Florida and west to Louisiana; also in Guatemala and Cuba.

VIRGINIA: Dismal Swamp, *Chase* 3658.

NORTH CAROLINA: Parmele, *Ashe* in 1899; Wilmington, *Hitchcock* 1428, 1429, 1434, 1440, *Kearney* 268.

SOUTH CAROLINA: Orangeburg, *Hitchcock* 1369, Aiken, *Ravenel*.

FLORIDA: Baldwin, *Hitchcock* 990; Lake City, *Combs* 112, *Hitchcock* 1021, 1022; Bay Head, *Combs* 650; Old Town, *Combs* 854; Perdido Bay, *Tracy* 8409; Titusville, *Chase* 3966, *Hitchcock* 761; Sanford, *Hitchcock* 768, 823, 826; Eustis, *Chase* 4043, *Hitchcock* 817, *Nash* 925; Orange County, *Baker* 119; Lemon Bay, *Tracy* 7189; Miami, *Hitchcock* 639, 666, 667, 670, 679, 714, 720; Homestead, *Hitchcock* 692; Tampa, *Hitchcock* 945; Lakeland, *Hitchcock* 838, 839, 848; Braidentown, *Hitchcock* 949, 963, *Tracy* 6733; Manatee, *Rugel* 184; Myers, *Chase* 4151, *Hitchcock* 870, 876, 880, 882, 884, 886.

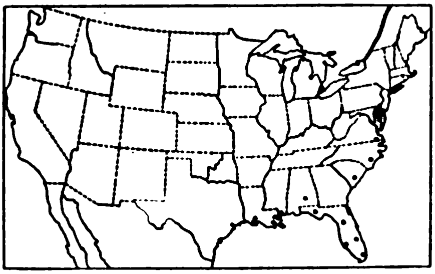


FIG. 284.—Distribution of *P. albomarginatum*.

ALABAMA: Tuskegee, *Carver* 97.

MISSISSIPPI: Biloxi, *Tracy* 4605 in part (Gray Herb.).

LOUISIANA: Calcasieu River, *Langlois* 42 in 1884.

GUATEMALA: Between Gualán and Copán, *Pittier* 1805a.

CUBA: Herradura, *Hitchcock* 555; Pinar del Rio, *Wright* 3463 in part (Sauvalle Herb.); Isle of Pines, *Taylor* 32.

154. Panicum trifolium Nash.

Panicum trifolium Nash, Bull. Torrey Club **26**: 580. 1899. "Type collected by Dr. John K. Small, in the Ocmulgee River Swamp, below Macon, Georgia, May 18–24, 1895." The type, in Nash's herbarium, consists of two tufts of slender vernal culms, 25 to 40 cm. high, with leafy bases and elongated internodes, the rather short-exserted panicles immature.

DESCRIPTION.

Vernal form similar to that of *P. albomarginatum*, but the culms in smaller tufts, taller, 20 to 50 cm. high, more slender, erect; leaves less conspicuously crowded at the base, not so stiff, and proportionately not so much longer than those of the mid-culm; sheaths much shorter than the elongated internodes; blades 3 to 5 cm. long, 4 to 5 mm. wide, rather less thick and firm than those of *P. albomarginatum*, the uppermost blade not reduced; panicles usually short-exserted, 3 to 5 cm. long, about as wide, loosely flowered; spikelets as in *P. albomarginatum* but hardly as wide or as turgid, and the fruit rather less exposed at maturity.

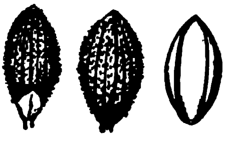


FIG. 285.—*P. trifolium*. From type specimen.

Autumnal form erect or leaning, sparingly branching from the middle and upper nodes, the branches usually shorter than the primary internodes.

This species is very closely allied to the preceding and some vernal specimens are but doubtfully separated from it. Autumnal specimens may be distinguished by the small fascicles of short branches scattered along the slender primary culm.

Occasional specimens, such as *Chase* 4112, 4166, and 4304, are brighter green than usual, with less pronounced white margins to the blades and resemble *P. flavovirens*, but in these the primary culms bear short branches from the middle and upper nodes.

DISTRIBUTION.

Low, mostly moist sandy woods, North Carolina and Tennessee to Florida and Louisiana.

NORTH CAROLINA: Scranton, *Chase* 3199; Roanoke Island, *Chase* 3225, 3238, 3239, 3248; Chapel Hill, *Ashe*, *Chase* 3060; east of Wilmington, *Chase* 3133, 4576.

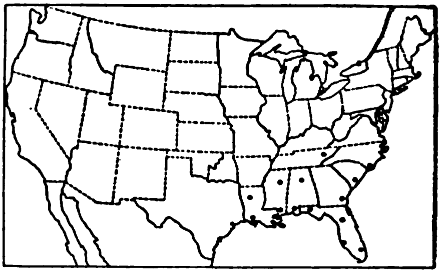


FIG. 286.—Distribution of *P. trifolium*.

SOUTH CAROLINA: Orangeburg, *Hitchcock* 1387; without locality, *Ravenel*.

GEORGIA: Below Macon, *Small* in 1895; Warm Springs, *Tracy* 8864; Augusta, *Cuthbert* 382, 1159.

FLORIDA: Baldwin, *Hitchcock* 997; Milton, *Chase* 4304; Apalachicola, *Biltmore Herb.* 697a; Lake City, *Hitchcock* 1023, 1038; Madison, *Combs* 263; Sanford, *Hitchcock* 779; Grasmere, *Combs* 1063; Orange Bend, *Chase* 4112; Tampa, *Hitchcock* 938, 940; Braidentown, *Hitchcock* 953, 962; Dunedin, *Tracy* 7029; Myers, *Chase* 4166, *Hitchcock* 890, 920, 921; Miami, *Chase* 3946, *Hitchcock* 712.

TENNESSEE: White Cliff Springs, *Scribner* in 1890 (Hitchcock Herb.).

ALABAMA: Auburn, *Earle & Baker* 1535 in part; Cullman, *Eggert* 24; Flomaton, *Hitchcock* 1042, 1050, 1053.

MISSISSIPPI: Jackson, *Hitchcock* 1305; Biloxi, *Chase* 4358, *Hitchcock* 1063, 1072, 1088, *Tracy* 2865, 4612; Mississippi City, *Hitchcock* 1089, 1100, 1111, Avondale, *Tracy* 4583, 4603; Saundersville, *Tracy* 3334; Horn Island, *Tracy* 4601.

LOUISIANA: Calhoun, *Hitchcock* 1267, 1277; Lake Charles, *Hitchcock* 1130, 1146.

155. **Panicum flavovirens** Nash.

Panicum flavovirens Nash, Bull. Torrey Club **26**: 572. 1899. "Type collected by the writer in Lake Co., Florida, June 16–30, 1895, no. 2061; growing in swampy woods along the edge of road leading to the ford near the J. T. & K. W. R. R. bridge across the Wekiva river." The type, in Nash's herbarium, is a late vernal form, the primary panicles mostly destitute of spikelets. One of the specimens has a tuft of the long, rather thin, bright green, glossy basal leaves that distinguish this species. The other specimen lacks this prominent tuft of basal leaves and in habit resembles the type of *P. albomarginatum* Nash, but the blades are not firm and leathery nor white-margined, and the panicles are few-flowered, with flexuous branches.

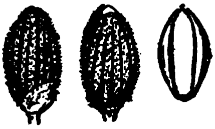


FIG. 287.—*P. flavovirens*. From type specimen.

DESCRIPTION.

Vernal form bright glossy green; culms densely tufted, very slender, ascending or spreading, 15 to 30 cm. high, glabrous, more or less striate-angled, the lower leaves somewhat crowded with overlapping sheaths, the upper distant; sheaths often minutely ciliate on the margin, especially at the summit, otherwise glabrous or the lowermost obscurely pubescent; blades ascending or spreading, 2 to 5 cm. long, 3 to

4 mm. wide, narrowed toward the rounded base, glabrous, or minutely puberulent beneath, thin, the cartilaginous margin inconspicuous or wanting; panicles open, loosely few-flowered, the flexuous branches spreading or the lower somewhat reflexed; spikelets 1.3 to 1.4 mm. long, 0.7 mm. wide, elliptic, subacute, pubescent; first glume one-fourth to one-third as long as the spikelet, subacute; second glume hardly equaling the fruit and sterile lemma; fruit 1.25 mm. long, 0.6 mm. wide, elliptic.

Autumnal form spreading, the slender culms mostly decumbent or prostrate, branching from the lower and middle nodes, these early branches usually as long as the primary culms and loosely branching toward the summit, the short branchlets somewhat fascicled, the flat, reduced blades spreading, the ultimate panicles reduced but exserted; winter rosettes appearing early, usually conspicuous and persisting green during the following season as a dense tuft of sterile shoots with somewhat developed internodes, the blades thin, bright glossy green, as much as 7 cm. long, 3 to 5 mm. wide.

This species is allied to *P. albomarginatum* and *P. trifolium*, from both of which it is distinguished by the thin bright-green glossy blades, which are scarcely or not at all white-margined. The mode of branching is like that of *P. albomarginatum*, but looser, the thin blades spreading, the small panicles exserted.

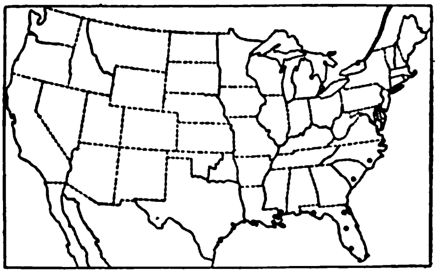


FIG. 288.—Distribution of *P. flavovirens*.

DISTRIBUTION.

Moist shady or mucky soil, North Carolina to Florida and Mississippi.

NORTH CAROLINA: Wilmington, *Hitchcock* 337.

SOUTH CAROLINA: Orangeburg, *Hitchcock* 25.

FLORIDA: Jacksonville, *Combs* 34; Lake City, *Combs* 98 in part; Pensacola, *Combs* 539; Milton, *Chase* 4310, 4322; Chipley, *Combs* 585; Sanford, *Hitchcock* 767½; Eustis, *Chase* 4059, *Nash* 2061; Grasmere, *Combs* 1088; Tampa, *Combs* 1394; Lemon Bay, *Tracy* 7188 in part; Myers, *Hitchcock* 901½, 905.

MISSISSIPPI: Biloxi, *Tracy* 2027.

156. **Panicum concinnius** nom. nov.

Panicum gracilicaule Nash in Small, Fl. Southeast. U. S. 98. 1903, not Rendle, 1899. On page 1327 in the list of new genera and species, the following citation is given: "Type, Sand Mt., Jackson Co., Ala., *Harbison*, no. 2415, 1900, in Herb. N. Y. B. G." This specimen, in the herbarium of the New York Botanical Garden, from the Biltmore Herbarium, is the vernal form, the panicles immature.

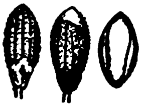


FIG. 289.—*P. concinnius.* From type specimen of *P. gracilicaule* Nash.

DESCRIPTION.

Vernal form bright green; culms tufted, very slender, erect, glabrous, 12 to 50 cm. high, nodes minutely puberulent; sheaths, except the lower, much shorter than the internodes and less than half as long as the blades, puberulent on the margin, otherwise glabrous; ligules about 0.5 mm. long; blades 5 to 7 cm. long, 5 to 6 mm. wide, erect or spreading, the margins nearly parallel for most of their length, rounded at base, glabrous or obscurely puberulent beneath, rather strongly nerved, faintly white-margined; panicles finally long-exserted, rather few-flowered, 3 to 6 cm. long, about two-thirds as wide, the branches ascending; spikelets 1.1 mm. long, 0.7 mm. wide, obovate, obtuse, pubescent; first glume about one-fifth the length of the spikelet; second glume and sterile lemma slightly shorter than the fruit at maturity; fruit 1 mm. long, elliptic, acute.

Autumnal form radiate-spreading, late in the season bearing a few branches with somewhat reduced blades and small exserted panicles; winter rosette appearing early, the numerous, rather firm blades bluish green, about the size of those of the vernal culms.

DISTRIBUTION.

Moist sandy ground, northern Georgia and Alabama; apparently rare.

GEORGIA: Thomson, *Bartlett* 1461.

ALABAMA: "Sandy soil along a creek, Sand Mt., June 5, 1900," *Harbison* 2415; "Bank along roadside above Bryants Creek, south of Pisgah, Oct. 14, 1907," *Chase* 4475; "In moist spot in woods, south of Pisgah, Oct. 14, 1907," *Chase* 4476; "Culms widely spreading, crevices of mossy rocks, north bank of Bryants Creek, south of Pisgah, Oct. 14, 1907," *Chase* 4483.

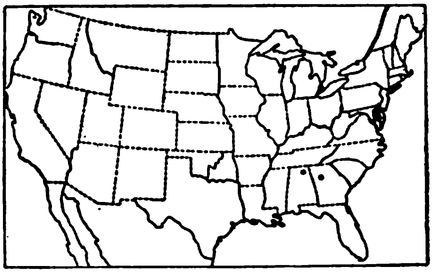


FIG. 290.—Distribution of *P. concinnius*.

The last-mentioned specimen, *Chase* 4483, was collected at the type locality of the species, as indicated by Mr. Harbison in a letter.

157. Panicum ensifolium Baldw.

Panicum ensifolium Baldw.; Ell. Bot. S. C. & Ga. **1**: 126. 1816. "Grows in damp soils, * * * Georgia. Dr. Baldwin." The type, in the Elliott Herbarium, is a slender plant 33 cm. high, with a tuft of four acuminate basal leaves, the blades 2.5 to 3.5 cm. long, four culm leaves, the upper minutely puberulent throughout on the under surface, the lower toward the tip only, and a long-exserted panicle, with puberulent spikelets 1.5 mm. long. The accompanying label reads: "Panicum ensifolium Bald. Hab: in humidis Georg: Dr. Baldwin." The basal blades of the type specimen and of a second specimen from "Baldw. Georg." in the herbarium of the Philadelphia Academy are firm and sharp-pointed, though to a much less degree than in *P. tenue* and *P. albomarginatum*.

Panicum nitidum ensifolium Vasey, U. S. Dept. Agr. Div. Bot. Bull. **8**: 29. 1889. Based on *Panicum ensifolium* Baldw., though the description applies to *P. vernale*.

Panicum brittoni[i] Nash, Bull. Torrey Club **24**: 194. 1897. "In moist sand in the 'pine barrens' at Forked River, N. J. Collected by Dr. Britton during an excursion of the Torrey Botanical Club to the region May 29–June 2, 1896." The type, in Nash's herbarium, consists of a tuft of slender, simple, vernal culms 10 to 19 cm. high, the blades glabrous or minutely puberulent on the under surface, the minutely pubescent spikelets 1.3 to 1.4 mm. long.

Panicum cuthbertii Ashe, Journ. Elisha Mitchell Soc. **15**: 48. 1898. "South Carolina: Cuthbert; St. Helena Island." This specimen could not be found in Ashe's herbarium, but a piece of the type bearing the above data, sent by Mr. Ashe, is in the National Herbarium. It consists of a single vernal culm lacking the base, with two nodes, the blades broken off, but the sheaths present, the panicle short-exserted, the immature, pubescent spikelets 1.4 mm. long. Ashe states that "it is separated from *P. ensifolium* by the strict habit and large basal leaves of the latter," but *P. ensifolium* as understood by Ashe is *P. albomarginatum*, as shown by his description[a] and by his giving *P. albomarginatum* Nash as a synonym of *P. ensifolium*.

---

[a] Journ. Elisha Mitchell Soc. **15**: 46. 1898.

Panicum glabrissimum Ashe, Journ. Elisha Mitchell Soc. **15**: 62. 1898. "The type material was collected by me June, 1898, at Manteo, Dare Co., N. C." The type could not be found in Ashe's herbarium. In the Mohr Herbarium is a specimen labeled in Ashe's writing "Panicum glabrissimum Ashe" and bearing the cited data. This is a tuft of three vernal culms and agrees with the description, except that the spikelets are said to be glabrous, while these are pubescent. The specimen in the National Herbarium from the same station and sent by Ashe as part of the type collection is *P. tenue*, and fails in several particulars to agree with the description. While neither of these specimens is the type itself, the one which most nearly agrees with the description is taken to represent the type.

Panicum shallotte Ashe, Journ. Elisha Mitchell Soc. **16**: 84. 1900. Based on "*P. glabrissimum* Ashe, not *P. glaberrimum* Steud."

Panicum parvipaniculatum Ashe, Journ. Elisha Mitchell Soc. **16**: 87. 1900. "Collected May 20, in Onslow county, N. C. Type material is preserved in my herbarium." No specimen so labeled could be found in Ashe's herbarium, but a cover marked in Ashe's hand "P. parvipaniculatum" was found which contained eight sheets of unmounted material, of which two sheets (one within the fold of the other) were accompanied by a label with the following data in Ashe's writing: "Panicum gray spikelets? Peaty-soiled thickets sandy flatwoods and ditch banks, 10–18 miles east of Jacksonville, Onslow county, N. C. May 20, 1899." Since these were the only specimens with locality and date according with those published, the specimens on the sheet with the label were chosen as the type, one tuft being deposited in the National Herbarium. These specimens agree with the description except that the species is said to be "perfectly glabrous except the ligule" while the blades are puberulent beneath and some of them on the upper surface also; that the ligule is given as "about 2 mm. long," while it is almost obsolete (0.1 to 0.2 mm. long); and that the spikelets are given as "barely 1 mm. long," while they measure 1.3 to 1.4 mm. long. This type differs from those of *P. ensifolium* and *P. brittonii* in having glabrous spikelets.

DESCRIPTION.

Vernal plants grayish olive green; culms cespitose, slender, erect or reclining, glabrous, 20 to 40 cm. high; sheaths glabrous, usually much shorter than the internodes; blades distant, often reflexed, 1 to 3 cm. long, 1.5 to 3 mm. wide, glabrous on the upper surface or puberulent toward the base, puberulent beneath, at least toward the tip; panicles finally long-exserted, 1.5 to 4 cm. long, nearly as wide, the flexuous branches spreading or the lower reflexed; spikelets 1.3 to 1.5 mm. long, elliptic, subacute, glabrous or puberulent; first glume one-fourth as long as the spikelet or less, acute or obtuse; second glume slightly shorter than the fruit and sterile lemma; fruit 1.2 mm. long, elliptic, subacute.

Autumnal culms spreading or reclining, sparingly branching from the middle nodes, the branches mostly remaining simple; winter blades glabrous, usually short, 1.5 to 3 cm. long, 2 to 4 ~~cm.~~ wide. mm.

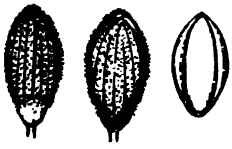


FIG. 291.—*P. ensifolium*. From type specimen.

In this species the pubescence of the spikelets seems to be very inconstant. The type of *P. brittonii* and *Chase* 3557 have pubescent spikelets, while *Chase* 3535 and specimens collected by Clute in 1899 and by Bicknell in 1900, also in New Jersey, have glabrous spikelets; of the North Carolina specimens *Hitchcock* 1425, *Chase* 3096½, 3176, 3177, 3227, and 3234 have pubescent spikelets.

Combs's no. 74, Lake City, Florida, and *Tracy* 44, Ocean Springs, Mississippi, two very slender autumnal specimens, the first with puberulent, the latter with glabrous, spikelets, are doubtfully referred here.

DISTRIBUTION.

Wet places, mostly sphagnum bogs or swamps, New Jersey to Georgia; also in Mississippi.

NEW JERSEY: Forked River, *Britton* in 1896; Penn Place, *Clute* in 1899; Toms River, *Bicknell* in 1900; Atsion, *Chase* 3535, 3557.

MARYLAND: Beltsville, *Chase* 3739.

NORTH CAROLINA: Roanoke Island, *Chase* 3227, 3234; West Raleigh, *Stanton*, 1272; Wilsons Mills, *Chase* 3096½, 3097; Onslow County, *Ashe* in 1899, *Chase* 3176, 3177, 3196; Wilmington, *Hitchcock* 1425, 1436½, 1439.

SOUTH CAROLINA: St. Helena Island, *Cuthbert* in 1887; Orangeburg, *Hitchcock* 1370, 1379, 1405.

GEORGIA: Bulloch County, *Harper* 829; Augusta, *Cuthbert* 1160; without locality, *Baldwin*.

MISSISSIPPI: Biloxi, *Hitchcock* 1067.

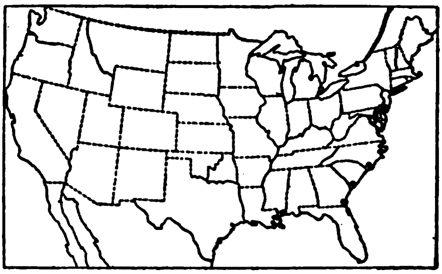


FIG. 292.—Distribution of *P. ensifolium*.

158. Panicum vernale sp. nov.

DESCRIPTION.

Vernal plants light green, soft in texture; culms densely cespitose, 15 to 30 cm., rarely to 40 cm. high, very slender, ascending or spreading, glabrous, the nodes glabrous; leaves clustered at the base, the thin, rather soft blades 2 to 7 cm. long, 3 to 5 mm. wide, those of the culm remote, the glabrous sheaths one-fourth to one-third as long as the elongated internodes; ligules almost obsolete; blades 0.7 to 2.5 cm. long, 2 to 3 mm. wide, glabrous or puberulent on the lower surface, occasionally also on the upper surface, at first erect, becoming spreading or reflexed; panicles finally long-exserted, 1.5 to 3 cm. long, nearly as wide, rather few-flowered, the flexuous branches spreading; spikelets 1.4 to 1.5 mm. long, 0.8 mm. wide, obovate-elliptic, subacute, pubescent; first glume about one-fourth as long as the spikelet, subacute; second glume and sterile lemma scarcely as long as the fruit at maturity; fruit 1.2 mm. long, 0.7 to 0.8 mm. wide.

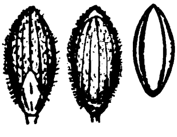


FIG. 293.—*P. vernale*. From type specimen.

Autumnal form like the vernal form in appearance, branching from the base, these culms simple and soon dying to the ground, rarely late in the season producing a few short fascicled branchlets at the nodes, the scarcely reduced flat blades spreading; winter leaves numerous, soft, persistent during the vernal stage, linear, rather abruptly narrowed at the apex, not long-acuminate.

Type U. S. National Herbarium no. 558416, collected in a "sphagnum bog, Lake City, Florida, April 16, 1906," by A. S. Hitchcock (no. 1020).

This species has been confused with *P. ensifolium* Baldw.,[a] from which it is distinguished by the more densely cespitose habit and light green, soft foliage, the very numerous basal blades as much as 7 cm. long, flat, linear, not long-acuminate.

---

[a] *Panicum nitidum ensifolium* as described in Chapman's Flora (Fl. South. U. S. ed. 3. 586. 1897) is *P. vernale*.

All the specimens cited below were collected in the spring. Since localities, like Lake City, Eustis, and Miami, Florida, where this species was found in March and April, were visited in September without its being found, it would seem that the plants usually die to the ground in early summer and that the secondary branches appear only rarely. In *Hitchcock* 931 and 958½ a few sparingly branched dead culms are attached, being the only branching culms seen.

Two collections, *Hitchcock* 809 and *Nash* 424, have blades pubescent on the upper surface, while *Hitchcock* 941 and 1092 have some blades that are pubescent and some that are glabrous on the upper surface. Hitchcock's nos. 1066 and 1092 have glabrous spikelets.

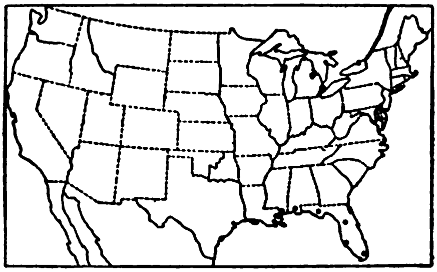


FIG. 294.—Distribution of *P. vernale*.

DISTRIBUTION.

Moist places, especially sphagnum bogs, Florida to Mississippi.

FLORIDA: Baldwin, *Hitchcock* 1004; Lake City, *Bitting* 19, *Hitchcock* 1020; Apalachicola, *Chapman;* Eustis, *Nash* 273 in part, 424, *Hitchcock* 795, 798, 809; Dunedin, *Tracy* 6699; Braidentown, *Hitchcock* 958½, 959, 960; Johns Pass *Tracy* 7180; Tampa, *Hitchcock* 936, 941; Miami, *Hitchcock* 931, 942.

ALABAMA: Flomaton, *Hitchcock* 1041.

MISSISSIPPI: Biloxi, *Hitchcock* 1066; Mississippi City, *Hitchcock* 1092.

159. Panicum curtifolium Nash.

Panicum curtifolium Nash, Bull. Torrey Club **26**: 569. 1899. "Collected by S. M. Tracy at Ocean Springs, Mississippi, May 2, 1898, no. 4598." The type, in Nash's herbarium, consists of a tuft with two slender vernal culms about 30 cm. long, beginning to branch at the middle nodes. The blades are glabrous above except at the base and glabrous or sparsely pubescent beneath. In a duplicate type in the National Herbarium several blades have a few scattered hairs on the upper surface.

Panicum earlei Nash, Bull. Torrey Club **26**: 571. 1899. "Type collected at Auburn, Lee Co., Alabama, on May 7, 1898, by Messrs. F. S. Earle and C. F. Baker, no. 1532." The type, in Nash's herbarium, consists of a tuft of early vernal culms 8 to 15 cm. high, with immature panicles. The blades are sparsely pilose on the upper surface.

Panicum austro-montanum Ashe, Journ. Elisha Mitchell Soc. **16**: 85. 1900. "Along mountain streams of Northern Alabama and the adjacent parts of Tennessee. Type material is preserved in my herbarium." The type specimen could not be found in Ashe's herbarium. In the National Herbarium is a specimen from Sand Mountain, Alabama, June, 1899, sent by the Biltmore Herbarium, which was compared by E. D. Merrill in 1900 and said by him to be identical with the type of *P. austro-montanum*. It is also the same as a specimen from western North Carolina sent by Ashe as representing *P. austro-montanum*, and furthermore agrees with the original description except that the spikelets are 1 mm. long, instead of 0.7 mm. long. The Biltmore specimen agrees with the types of *P. curtifolium* and *P. earlei*.

DESCRIPTION.

Vernal form in dense colonies, the culms not crowded in the clump; culms 10 to 30 cm. high, slender, weak, angled, erect or spreading, glabrous or sometimes with a few scattered hairs, the nodes sparsely bearded; sheaths much shorter than the elongated internodes, striate-angled, sparsely spreading-pilose, ciliate, especially at the summit; ligules about 1 mm. long, the hairs soft, rather sparse; blades spreading or reflexed, 1.5 to 3 cm. long, 2 to 5 mm. wide, thin and soft, sparsely pilose on both surfaces or glabrous above except for long soft hairs near the base; panicles short-exserted at least till after maturity, 2 to 3 cm. long, nearly as wide, the branches ascending; spikelets 1.4 mm. long, 0.7 mm. wide, elliptic-obovate, obtuse, glabrous, or minutely pubescent; first glume about one-fifth as long as the spikelet; second glume and sterile lemma both shorter than the fruit at maturity; fruit 1.25 mm. long, 0.7 mm. wide, elliptic.

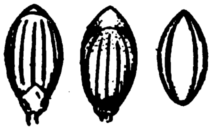


FIG. 295.—*P. curtifolium.* From type specimen.

Autumnal form weakly spreading, the culms branching from the middle nodes after the maturity of the primary panicles, the branches exceeding the internodes; ultimate branchlets in small fascicles toward the summit of the branches, the reduced blades spreading and the small panicles mostly exserted; winter rosette appearing early, the soft blades mostly 2 to 3 cm., but sometimes as much as 5 cm. long.

This species is the only one of this group with spreading pilose pubescence and manifest ligules.

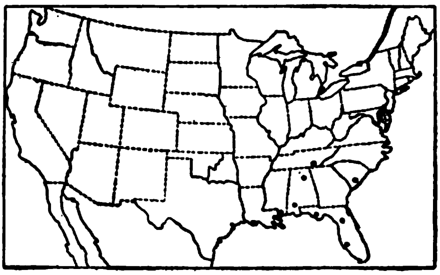


FIG. 296.—Distribution of *P. curtifolium.*

DISTRIBUTION.

Boggy soil and shady, moist places, sometimes forming a rather dense carpet, South Carolina and Tennessee to Florida and Mississippi.

SOUTH CAROLINA: Aiken, *Ravenel;* Hartsville, *Coker* in 1909.

FLORIDA: Pensacola, *Combs* 525; Eustis, *Holm* 24, *Nash* 1507; Myers, *Hitchcock* 867; without locality, *Chapman.*

TENNESSEE: Lookout Mountain, *Biltmore Herb.* 10715b (Biltmore Herb.).

ALABAMA: Sand Mountain, *Biltmore Herb.* in 1899; Auburn, *Earle & Baker* 1532, *Hitchcock* 1337, *Tracy* 3748 in part, 3752; Flomaton, *Hitchcock* 1058; Tuskegee, *Carver* 27, 41; Gateswood, *Tracy* 8421.

MISSISSIPPI: Ocean Springs, *Tracy* 4598, 4599; Mississippi City, *Hitchcock* 1094.

160. Panicum chamaelonche Trin.

Panicum chamaelonche Trin. Gram. Pan. 242. 1826. Trinius states concerning the origin of his specimen, "V. spp. Am. bor. (TRATTINICK, ex. coll. Enslini)." The type, in the Trinius Herbarium, is the early branching form.

Panicum nitidum minor[*us*] Vasey, Contr. Nat. Herb. **3**: 30. 1892. "Florida." The type, in the National Herbarium, was collected by William C. Canby at St. Augustine, Florida, April, 1869, and is labeled "nitidum var. minor" in Dr. Vasey's writing. This consists of several small tufts of vernal culms.

Panicum baldwinii Nutt.; Kearney, U. S. Dept. Agr. Div. Agrost. Bull. **1**: 21. 1895. The citation is as follows: "Panicum baldwinii Nutt. in Herb. Phila. Acad. (*Panicum nitidum minor* Vasey Contr. U. S. Nat. Herb. 3: No. 1, 30, 1892.)" No description is given. Since Nuttall's herbarium name is taken up, this name should be considered a nomen nudum, and not based on the synonym cited.

Panicum baldwinii Nutt.; Chapm. Fl. South. U. S. ed. 3. 586. 1897. Based on "Panicum baldwinii Nutt. (in Herb.)" and described. The type, in the Nuttall Herbarium, labeled "Panicum Baldwinii, Florida, Bald." is a tuft of vernal culms beginning to branch, with mature and over-mature panicles.

The species described as *P. ramulosum* Michx. by Chapman[a] is *P. chamaelonche* as shown by the description, by a specimen in the Chapman Herbarium at the New York Botanical Garden labeled "Panicum ramulosum Michx. (nitidum S. Fl.!)[b] Southern Florida," and by the fact that Chapman[c] cites "*P. ramulosum* Flora" [Southern U. S.] as a synonym under *P. baldwinii* Nutt.

Scribner[d] describes and illustrates this species as *P. baldwinii* "Nutt. in herb." and gives as synonym, "*P. dichotomum* var. *nitidum* Chapman, Southern Flora, first edition." Chapman does not make the combination as stated by Scribner, but refers *P. nitidum* Ell. to *P. dichotomum* as a form. Chapman's plant as stated above is *P. chamaelonche*, but *P. nitidum* of Elliott's herbarium is *P. longiligulatum* Nash.

DESCRIPTION.

Vernal form densely tufted; culms 10 to 20 or even 30 cm. high, ascending, glabrous, the nodes glabrous; sheaths, except the basal ones, half as long as the internodes or less, at least the upper rather loose, glabrous or occasionally with a few ciliæ on the margin; ligules 0.2 mm. long; blades firm, ascending or spreading, 1.5 to 4 cm., rarely 5 cm. long, 2 to 3 mm. wide, more or less involute-pointed, glabrous on both surfaces, often with a few long, stiff hairs on the margin near the base; panicles finally long-exserted, 2.5 to 5 cm. long, nearly as wide, the flexuous branchlets and pedicels spreading at nearly right angles; spikelets 1.1 to 1.2 mm. long, 0.6 mm. wide, obovate, obtuse, turgid, glabrous; first glume one-fourth to one-third as long as the spikelet, obtuse; second glume slightly shorter than the fruit and sterile lemma; fruit 0.9 to 1 mm. long, 0.6 mm. wide, elliptic, subobtuse.

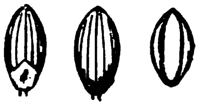


FIG. 297.—*P. chamaelonche.* From type specimen.

Autumnal form freely branching from the base and lower nodes, the early branches often as long as the primary culms, repeatedly branching, forming dense cushions, as much as 50 cm. across, the longer culms upturned at the ends; ultimate branchlets more or less fascicled, the scarcely reduced blades drying involute, overtopping the small panicles; winter rosettes usually persisting green during the vernal state, the rather firm blades 2 to 5 cm. long.

The plants are usually purple throughout in both vernal and autumnal state. Occasional specimens, such as *Hitchcock* 873, are yellow green, and look strikingly different in the field. Hitchcock's no. 1436, *Chase* 4570, and *Tracy* 6732 have unusually large blades, as much as 6 cm. long and 5 mm. wide. The specimens of *Hitchcock* 952 are 30 to 40 cm. high, with large panicles and rather long lower blades and appear to be intermediate between this and *P. glabrifolium*.

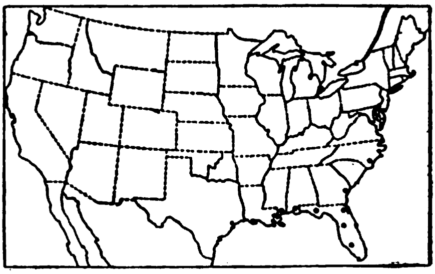


FIG. 298.—Distribution of *P. chamaelonche.*

DISTRIBUTION.

Open sandy soil, mostly in the low pine land or "flatwoods," North Carolina to Florida and Mississippi.

NORTH CAROLINA: Vicinity of Wilmington, *Chase* 3125, 4570, *Hitchcock* 338, 339, 1427, 1435, 1436, 1483, 1488; Wards Mill, *Chase* 3182.

GEORGIA: Savannah, *Kearney* 177.

---

[a] Fl. South. U. S. ed. 2. 667. 1889.

[b] This is included as a form under *P. dichotomum* L. in Chapm. Fl. South. U. S. 576. 1860.

[c] Fl. South. U. S. ed. 3. 586. 1897.

[d] U. S. Dept. Agr. Div. Agrost. Bull. 11: 43. *f. 3.* 1898.

Florida: Jacksonville, *Curtiss* 21, 3602*, 5588, *Kearney* 145; Baldwin, *Hitchcock* 985; Lake City, *Combs* 127, *Hitchcock* 1027, 1037; Carabelle, *Kearney* 92; Dunedin, *Tracy* 6726; St. Augustine, *Canby* in 1869; Indian River, *Palmer* 634 in 1874 in part; Melbourne, *Curtiss* 5804; Titusville, *Chase* 3965, *Hitchcock* 759; Jensen, *Hitchcock* 729; Sanford, *Chase* 4032, 4036, 4037, *Hitchcock* 769, 778, 781, 828; Eustis, *Chase* 4053, *Hitchcock* 794, 806, 807, 818, *Nash* 51, 71, 335, 778, 1238; Oakland, *Curtiss* 6628; Lemon Bay, *Tracy* 7191, 7200; Tampa, *Combs* 1344, *Hitchcock* 928, 934, 944; Braidentown, *Hitchcock* 951, 952, 954, 973, *Tracy* 6732; Manatee, *Hitchcock* 975, *Rugel* 377; Myers, *Chase* 4153, 4156, 4171, *Hitchcock* 865, 866, 873, 885, 887, 895, 916, 924, Lee Co. Pl. 472; Sneeds Island, *Tracy* 6451, 6464, 6693; Perdido, *Tracy* 8407.

Alabama: Fort Morgan, *Tracy* 7207.

Mississippi: Avondale, *Tracy* 4610; Mississippi City, *Hitchcock* 1114.

In the herbarium of the Philadelphia Academy is a specimen said to be from Surinam which appears to be *P. chamaelonche.*

161. Panicum glabrifolium Nash.

Panicum glabrifolium Nash, Bull. Torrey Club **24**: 196. 1897. "Collected by the writer in the 'flatwoods' at Tampa, Florida, on August 20, 1895, no. 2415a." The type, in Nash's herbarium, is the early branching state. The spikelets are 1.25 mm. long. The statement in the original description, "the spikelets slightly exceeding .5 mm. in length" is doubtless a typographical error.

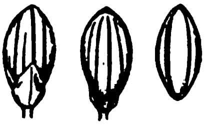


Fig. 299.—*P. glabrifolium.* From type specimen.

DESCRIPTION.

Vernal form similar to that of *P. chamaelonche*, in smaller tufts; culms stouter, more or less flattened, 15 to 50 cm. high, erect or sometimes subgeniculate at base; blades firm, erect, or narrowly ascending 4 to 12 cm. long, or the lower occasionally as much as 20 cm. long, 2 to 4 mm. wide, usually involute at least toward the apex, glabrous; panicles 4 to 9 cm. long, two-thirds to three-fourths as wide, the branches ascending, the ultimate branchlets and spikelets more or less secund along the lower side of the branches; spikelets 1.2 to 1.4 mm. long, obovate, obtuse, turgid, glabrous; first glume about one-third as long as the spikelet; second glume shorter than the fruit and sterile lemma; fruit 1.1 to 1.2 mm. long, elliptic.

Autumnal culms wiry, elongated, and spreading, with geniculate nodes and long internodes; freely branching from the middle and upper nodes, the blades long and narrow, overtopping the somewhat reduced panicles; winter leaves less numerous than in *P. chamaelonche*, as much as 10 to 15 cm. long, stiffly ascending.

In the vernal form this species is distinguished from *P. chamaelonche* by the taller, stouter culms, more involute blades, larger panicles, and slightly larger spikelets. The autumnal form is distinguished by the different branching habit. There are, however, intermediate specimens that appear to connect the two species, such as *Hitchcock* 893, from Myers, which has the tall culms, elongated lower blades and large panicles of *P. glabrifolium* but the smaller spikelets of *P. chamaelonche.*

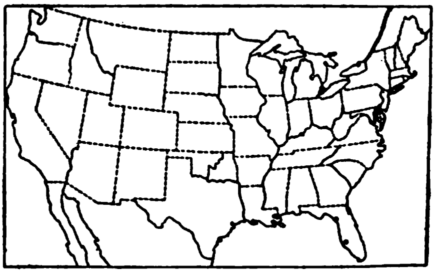


Fig. 300.—Distribution of *P. glabrifolium.*

DISTRIBUTION.

Low sandy woods, peninsular Florida.

Florida: Crystal, *Combs* 1024; Braidentown, *Combs* 1313, 1316, *Hitchcock* 966, *Tracy* 6715; Manatee, *Hitchcock* 978, *Simpson* in 1889; Cedar Key, *Combs* 780; Bartow, *Combs* 1187.

162. **Panicum breve** sp. nov.

DESCRIPTION.

Vernal form purplish, culms in dense tufts, 5 to 17 cm. high, erect, stiff and wiry, glabrous or appressed-pubescent below; sheaths crowded at the base as in species of Festuca, those of the culms usually longer than the internodes, ciliate on the margin, otherwise glabrous; ligules dense, about 0.3 mm. long; blades firm, erect or ascending, 3 to 6 cm., sometimes 8 cm. long, about 1.5 mm. wide when flattened out, strongly involute, more or less falcate, sometimes strongly so, a few long, stiff hairs on the margin toward the base, otherwise glabrous; panicle short-exserted, 1.5 to 4 cm. long, nearly as wide, loosely flowered, the flexuous branches spreading; spikelets 1.3 to 1.4 mm. long, obovate, obtuse, turgid, puberulent; first glume one-third to half as long as the spikelet; second glume and sterile lemma barely equaling the fruit at maturity; fruit 1.2 mm. long, elliptic.

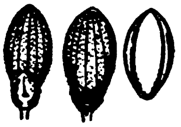


FIG. 301.—*P. breve.* From type specimen.

Autumnal form erect, branching from the middle nodes, the fascicled branches strict, the reduced wiry blades overtopping the panicles.

Type U. S. National Herbarium no. 558435, collected April 5, 1906, in "low pine woods between scrub hills, among palmetto," Jensen, Florida, by A. S. Hitchcock (no. 734).

This species is most closely related to *P. glabrifolium*, from which it is distinguished by its short, compact habit, by the strongly involute blades bearing long, stiff hairs near the base, and by the pubescent spikelets.

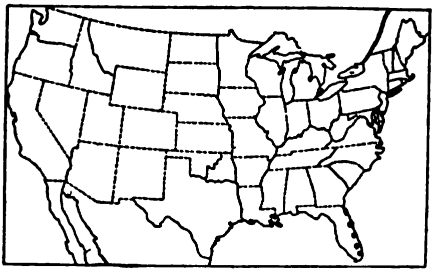


FIG. 302.—Distribution of *P. breve.*

DISTRIBUTION.

Low pine woods and hammocks, east coast of southern Florida.

FLORIDA: Indian River, *Palmer* 634 in 1874 in part; Jensen, *Hitchcock* 734; Fort Lauderdale, *Small & Carter* in 1903; "About Boca Ratone Lake, below Delray," *Small & Carter* in 1903 (Biltmore Herb.).

Lancearia.—Plants olive green, often purplish; vernal culms usually wiry, minutely crisp-puberulent or glabrous; sheaths glabrous or puberulent, at least at the summit; ligules nearly obsolete; blades glabrous or puberulent, usually strongly ciliate, at least near the base; spikelets unsymmetrically pyriform, that is, more swollen on the face than on the back; first glume thin and shining, broad at the summit, obtuse or truncate; second glume and sterile lemma strongly 7 to 9-nerved, puberulent or glabrous. Species of the Atlantic Coastal Plain.

Spikelets 1.5 to 1.6 mm. long.................................163. *P. pauciciliatum.*
Spikelets 2 mm. or more long.
  Blades, or some of them, at least 8 mm. wide; glabrous on the upper surface; fruit papillose-roughened.......166. *P. webberianum.*
  Blades not over 6 mm. wide (or if wider, puberulent on the upper surface); fruit smooth and shining.
    Spikelets 2.4 to 2.6 mm. long; blades narrowed totoward the base...............................167. *P. patentifolium.*

Spikelets not over 2.1 mm. long.
  Blades firm, glabrous above; culms stiffly ascending................................164. *P. lancearium.*
  Blades lax, softly puberulent on both surfaces; culms decumbent.........................165. *P. patulum.*

163. Panicum pauciciliatum Ashe.

Panicum pauciciliatum Ashe, Elisha Mitchell Soc. **16**: 87. 1900. "Collected by me May 20, 1899, growing in dry sand near Wilmington, N. C." The type, in Ashe's herbarium, consists of six single culms, beginning to branch, 25 to 30 cm. high, with somewhat geniculate nodes, and short-exserted, hardly mature panicles.

DESCRIPTION.

Vernal culms cespitose, erect or geniculate at base, slender, stiff and wiry, 15 to 30 cm. high, the internodes commonly reddish purple, crisp-puberulent to nearly glabrous; sheaths much shorter than the internodes, striate, glabrous or crisp-puberulent, usually ciliate; blades firm, 2 to 5 cm. long, 3 to 6 mm. wide, ascending or spreading, glabrous to puberulent, ciliate near the base; panicles 2 to 4 cm., rarely 6 or 7 cm., long, two-thirds as wide, the flexuous branches spreading or the lower reflexed, the pedicels and ultimate branchlets often directed toward the under side; spikelets 1.5 to 1.6 mm. long, 1 mm. wide; first glume one-third to half as long as the spikelet, obtuse or truncate; second glume and sterile lemma puberulent, the glume shorter than the fruit and sterile lemma; fruit 1.4 mm. long, 1 mm. wide, elliptic-obovoid, obscurely pointed.

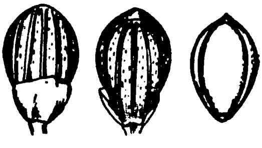


FIG. 303.—*P. pauciciliatum.* From type specimen.

Autumnal culms ascending from a decumbent base, branching from all but the uppermost node before the maturity of the primary panicles, the primary internodes often elongating, the terminal joint with its panicle together with the internode below it often falling early, thus giving the appearance of short culms branching at all the nodes characteristic of this species; early branches about equaling these shortened primary culms, repeatedly branching, the ultimate branchlets in fascicles toward the ends, the reduced blades spreading, involute-pointed; winter rosette appearing late, not conspicuous.

This species often closely resembles *P. lancearium*, but the differences, though small, are fairly constant, though *Chase* 3126 and *Ennis* in 1899 have spikelets 1.7 to 1.8 mm. long. *Chase* 3139, Wilmington, N. C., with ligules 0.3 mm. long and scarcely pyriform spikelets, is doubtfully referred here.

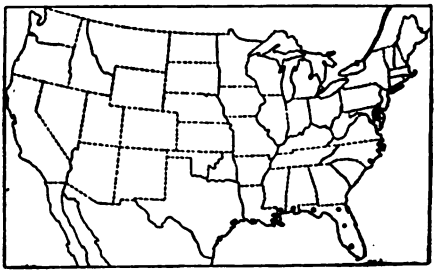


FIG. 304.—Distribution of *P. pauciciliatum.*

DISTRIBUTION.

Sandy woods of the Coastal Plain, mostly in moist places, North Carolina to Florida and along the Gulf to Texas; also in Cuba and Porto Rico.

NORTH CAROLINA: Roanoke Island, *Chase* 3246; Wilmington, *Ashe* in 1899, *Chase* 3126, 3127, 3128, 3162, 4567, *Hitchcock* 414, 416, 1432, 1477, 1479, 1487.

FLORIDA: Baldwin, *Hitchcock* 992; Apalachicola, *Chapman*; Orange County, *Baker* 41, 70, 71, 72, *Combs* 1085, *Meislahn* 169; Eustis, *Chase* 4045, *Hitchcock* 793, 797, 803, 804, 808, 819, *Nash* 15, 63 in part, 1337, 2076; Sumter County, *Curtiss* F, 3600A in part; Jensen, *Hitchcock* 733, 737, 750; Santa Rosa Island, *Tracy* 6446, 6447; Perdido, *Tracy* 8406; Myers, *Chase* 4173, *Hitchcock* 889.

Alabama: Fort Morgan, *Tracy* 8397.

Mississippi: Biloxi, *Kearney* 331½; Mississippi City, *Hitchcock* 1113; Horn Island, *Tracy* 2863, 8412.

Texas: Narcoossee, *Ennis* in 1899.

Cuba: Without locality, *Wright* 3876.

Porto Rico: Santurce, *Heller* 982b, 6442; Vega Baja, *Heller* 639, *Underwood & Griggs* 955.

164. Panicum lancearium Trin.

Panicum lancearium Trin. Gram. Pan. 223. 1826. Trinius here gives a full description and states that his specimen was collected in North America by Enslin and communicated by Trattinick: "V. spp. Am. bor. (Trattinick ex hbio Enslini)." Trinius had previously mentioned the name[a] as a probable synonym of a Plukenet species. The type, in the Trinius Herbarium, is the vernal form, with glabrous spikelets 2 mm. long. It is labeled "Plukn. Tb. 92. f. 6.? In Am. bor. ab Enslino l. dt. cl. Trattinick."

Panicum nashianum Scribn. U. S. Dept. Agr. Div. Agrost. Bull. 7: 79. *f. 61.* 1897. Two specimens are cited, "4029 Curtiss (1893), and 466 Nash (1894).—Low pine barrens, often in moist ground, near the coast, Virginia to Mississippi." The type (*Nash* 466, since the species is named for the collector) is in the National Herbarium. It consists of a clump of numerous culms 15 to 30 cm. high with mature and immature panicles, the spikelets minutely pubescent. The accompanying label gives the following data: "Dry sandy soil. Grows in dense clumps 1 ft. across. Collected in vicinity of Eustis, Lake county, Florida, by Geo. V. Nash, April 15–30, 1894." The Curtiss specimen cited by Scribner has glabrous spikelets.

DESCRIPTION.

Vernal culms cespitose, usually purplish, wiry, stiffly ascending from a more or less geniculate base, 20 to 50 cm. high, minutely grayish crisp-puberulent; sheaths puberulent, at least near the margin, much shorter than the internodes; blades ascending or spreading, firm, 2 to 6 cm. long, 3 to 7 mm. wide, puberulent or nearly glabrous beneath, usually glabrous on the upper surface, strongly ciliate toward the base, or sometimes nearly to the apex; panicles 3 to 6 cm. long, two-thirds as wide, rather few-flowered, the flexuous branches spreading, or the lower reflexed; spikelets 2 to 2.1 mm. long, 1 to 1.2 mm. wide; first glume one-third to half as long as the spikelet, obtuse or truncate; second glume and sterile lemma puberulent or sometimes glabrous, the glume slightly shorter than the fruit and sterile lemma; fruit 1.6 to 1.7 mm. long, 1 mm. wide, obovate-elliptic, minutely puberulent at the apex.

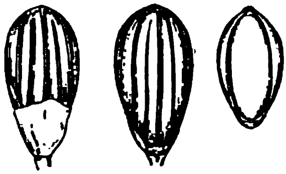


Fig. 305.—*P. lancearium.* From type specimen.

Autumnal culms geniculate-spreading, ascending at the ends, the stiff internodes occasionally elongated, branching from the middle nodes, the branches much longer than the internodes, late in the season bearing fascicles of short branchlets toward the summit, the reduced flat or involute-pointed blades spreading, the ultimate panicles reduced to a few spikelets, partly inclosed in the sheaths.

---

[a] Clav. Agrost. 234. 1822.

Occasional unusually large specimens, such as *Curtiss* 6626, *Hitchcock* 678, and *Tracy* 7051, resemble *P. webberianum*, but may be distinguished by the smaller spikelets, with smooth and shining fruits.

The following specimens approach *P. patulum* in habit or in having papillose, more rounded spikelets, but the blades are not pubescent on the upper surface, or but one or two are pubescent, the others being glabrous: *Chase* 3211, 4543, 4568, 4569, *Harper* 1689, *Hitchcock* 1016, *Wright* 3460.

DISTRIBUTION.

Low sandy woods of the Coastal Plain, from southeastern Virginia to Florida and Mississippi; also in Cuba.

Virginia: Cape Henry, *Chase* 2345; Norfolk, *Vasey* in 1884; Dismal Swamp, *Chase* 3656.

North Carolina: Roanoke Island, *Chase* 3211, 3224; Wards Mill, *Chase* 3181; Jacksonville, *Ashe* in 1899, *Chase* 3193, 3194; vicinity of Wilmington, *Chase* 3113, 3129, 4568, 4569, *Hitchcock* 1431, 1466, 1486.

South Carolina: Isle of Palms, *Ball* 792, *Chase* 4536, 4542, 4543, 4545.

Georgia: Savannah, *Kearney* 178; Tifton, *Harper* 1689.

Florida: Duval County, *Curtiss* 3600 A in part; Jacksonville, *Curtiss* 4029 (Hitchcock Herb.); Baldwin, *Hitchcock* 994, 1003; Lake City, *Combs* 75, 104; *Hitchcock* 1016, 1025, 1028, 1033; Titusville, *Chase* 3970, 4004, 4015, *Hitchcock* 764, 766; Sanford, *Hitchcock* 770, 784, 821, 824, 825; Eustis, *Nash* 301, 466; Pensacola, *Tracy* 8425; Clearwater, *Tracy* 7051 in part; Waldo *Combs* 686; Indian River, *Palmer* 631 in 1874; Gainesville, *Chase* 4239, *Combs* 744, 752; Lakeland, *Hitchcock* 844, 849; Tampa, *Hitchcock* 929, 932, 937; Oakland, *Curtiss* 6626; Madison, *Combs* 238; Crystal, *Combs* 1025; Bartow, *Combs* 1240; Manatee, *Hitchcock* 956, 977, *Rugel* 376; Santa Rosa Island, *Tracy* 6466; Pine Island, *Tracy* 7205; Sneeds Island, *Tracy* 6452; Perico Island, *Tracy* 6730; Palma Sola, *Tracy* 6714; Perdido, *Tracy* 8409; Sarasota, *Tracy* 7203; Seminole, *Tracy* 7194, 7195; Mary Esther, *Tracy* 7175, 9143; Myers, *Chase* 4149, 4175, *Hitchcock* 864, 869, 888, 911, 913; Miami, *Hitchcock* 664, 678, 713; without locality, *Rugel* 291.

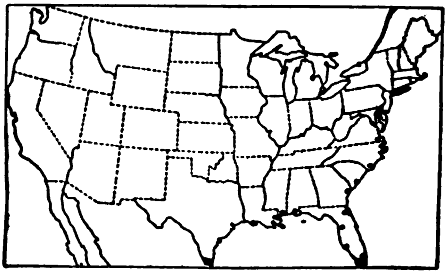


Fig. 306.—Distribution of *P. lancearium*.

Alabama: Flomaton, *Hitchcock* 1039½; Fort Morgan, *Tracy* 7209.

Mississippi: Avondale, *Tracy* 4581 in part; Biloxi, *Kearney* 330 in part, *Tracy* 2869, 6465; Mississippi City, *Hitchcock* 1093, 1298; Ocean Springs, *Skehan* in 1895.

Cuba: San Juan de Buenavista, *Wright* 3460 (Gray Herb.).

165. **Panicum patulum** (Scribn. & Merr.) Hitchc.

Panicum nashianum patulum Scribn. & Merr. U. S. Dept. Agr. Div. Agrost. Circ. **27**: 9. 1900. "Type specimen: 1296 Robert Combs, Braidentown, Manatee County, Fla., September 3, 1898." The type, in the National Herbarium, consists of a clump of numerous prostrate culms, 18 to 32 cm. long, with mature primary panicles and numerous branches with secondary panicles.

Panicum patulum Hitchc. Rhodora **8**: 209. 1906. Based on *P. nashianum patulum* Scribn. & Merr.

DESCRIPTION.

Vernal form densely cespitose, grayish olive green; culms geniculate-decumbent, ascending at the ends, as much as 50 cm. long, the internodes and sheaths densely velvety puberulent, the latter usually ciliate on the margin, at least toward the summit; blades rather lax, spreading, 4 to 8 cm. long, 4 to 8 mm. wide, tapering toward both ends, velvety-puberulent beneath, softly pubescent on the upper surface, sometimes obscurely so, ciliate at least half their length; panicles as in *P. lancearium*, the spikelets more globular-pyriform than in that species, 1.3 mm. wide and nearly as thick, second glume and sterile lemma densely papillose-pubescent; fruit 1.8 mm. long, 1.1 to 1.2 mm. wide; otherwise as in *P. lancearium*.

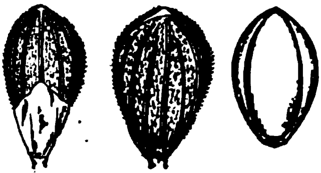


FIG. 307.—*P. patulum*. From type specimen.

Autumnal form more freely branching than in *P. lancearium*, often forming large mats, the decumbent culms producing ascending branches from all the nodes at about the maturity of the primary panicles, these repeatedly branching, the ultimate branchlets crowded, but about evenly so throughout, not in fascicles at the summit only, the spreading blades much reduced; winter rosettes appearing early, the blades often 7 or 8 cm. long, glabrous or nearly so on the upper surface.

This species is usually readily distinguished from *P. lancearium* by the decumbent habit and lax blades pubescent on both surfaces, but the blades are sometimes only obscurely pubescent above.

DISTRIBUTION.

Low moist woods of the Coastal Plain, southeastern Virginia to Florida and Louisiana.

VIRGINIA: Cape Henry, *Chase* 5434; Dismal Swamp, *Chase* 3674.

NORTH CAROLINA: Wilmington, *Chase* 3110, 4577.

SOUTH CAROLINA: Isle of Palms, *Chase* 4538, *Hitchcock* 413.

GEORGIA: Thomasville, *Small* in 1895 (Biltmore Herb.).

FLORIDA: Jacksonville, *Combs* 3, *Kearney* 140; Lake City, *Chase* 4282, *Combs* 132 in part; Milton, *Chase* 4312; Old Town, *Combs* 858, 859; Gainesville, *Chase* 4209; Grasmere, *Combs* 1169; Titusville, *Chase* 4026, *Hitchcock* 765; Eustis, *Chase* 4050, 4062, 4086; *Nash* 50, 151, 1117; Clearwater, *Tracy* 6701; Tampa, *Hitchcock* 946; Miami, *Hitchcock* 654, *Tracy* 8853; Levy County, *Combs* 783, 835; Palma Sola, *Tracy* 6729; Sneeds Island, *Tracy* 6703; Myers, *Chase* 4183, *Hitchcock* 922; Seminole, *Tracy* 7198.

ALABAMA: Mobile, *Hitchcock* in 1904 (Hitchcock Herb.).

MISSISSIPPI: Biloxi, *Chase* 4357, 4371, *Kearney* 331, *Tracy* 4586, 4587; Horn Island, *Tracy* 3976.

LOUISIANA: New Orleans, *Drummond* 452.

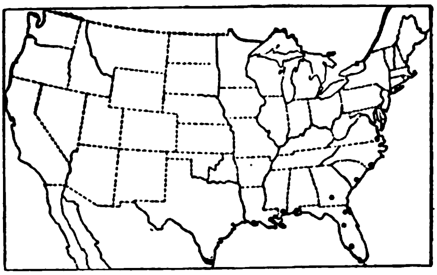


FIG. 308.—Distribution of *P. patulum*.

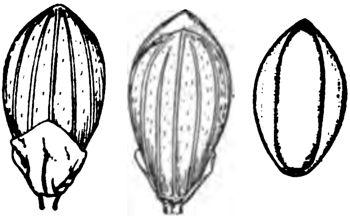
166. **Panicum webberianum** Nash.

Panicum webberianum Nash, Bull. Torrey Club **23**: 149. 1896. "Collected by the writer on the edge of a clay pit in the low pine land at Eustis, Lake Co., Florida, May 16–31, 1894, No. 781." The type, in Nash's herbarium, consists of two small tufts of vernal culms 35 to 45 cm. high, with blades as much as 1 cm. wide, and mature primary panicles, the spikelets 2.5 mm. long.

Panicum onslowense Ashe, Journ. Elisha Mitchell Soc. **16**: 88. 1900. "Type material was collected near Ward's Mill," Onslow County, N. C. The type, in Ashe's herbarium, is the vernal form with immature panicles, the culms glabrous or minutely puberulent, the lower blades as much as 1 cm. wide, the immature spikelets 2.4 mm. long. Other specimens in Ashe's herbarium and some distributed as *P. onslowense* and bearing the same data as the type are *P. lancearium*.

DESCRIPTION.

Vernal form commonly purplish; culms few to several in a tuft, rather stout, erect or ascending, 20 to 50 cm. high, minutely puberulent or glabrous; leaves somewhat crowded below, distant above; sheaths minutely puberulent at the summit, often ciliate on the margin, otherwise glabrous or nearly so; blades firm, ascending, especially the lower somewhat incurved or spoon-shaped, 3 to 9 cm. long, 4 to 12 mm. wide, usually ciliate at base and sometimes along the margin, rounded or subcordate at base, acute but not long-acuminate; panicles finally long-exserted, 4 to 10 cm. long, two-thirds as wide, the numerous flexuous branches spreading or the lower even reflexed, the branchlets and pedicels usually rather short, thus giving to the main branches a somewhat racemose appearance; spikelets 2.3 to 2.5 mm. long (in exceptional specimens only 2.1 to 2.2 mm. long), 1.2 to 1.3 mm. wide, obovoid to pyriform, commonly green, conspicuously purple-stained at the base; first glume one-third to two-fifths as long as the spikelet; second glume and sterile lemma minutely pubescent or glabrous, the glume slightly shorter than the fruit and sterile lemma; fruit 1.9 to 2 mm. long, 1.2 mm. wide, elliptic, under a lens minutely papillose-roughened, puberulent at the tip.



IG. 309.—*P. webberianum*. From type specimen.

Autumnal form spreading or decumbent, flabellately branching at the middle and upper nodes, the branches appressed and rather evenly distributed, sometimes somewhat fascicled; winter blades 3 to 8 cm. long, 5 to 10 mm. wide, strongly stained with purple, forming a flat rosette.

As a whole this species is readily distinguished from *P. lancearium* by its stouter, taller culms, much larger blades, and in typical specimens by the larger spikelets, but a few specimens occur in which only the lower blades are much larger than in *P. lancearium*, and rather numerous specimens in which the spikelets are only 2.1 to 2.2 mm. long. The minutely papillose-roughened fruit proves constant for all the specimens here referred to *P. webberianum*, but this character is evident only under a strong lens.

DISTRIBUTION.

Low pine land, North Carolina to Florida.

North Carolina: Onslow County, *Ashe* in 1899; Wilmington, *Chase* 4569½, *Hitchcock* 1433, 1472.

Georgia: Brunswick, *Ruth* in 1893 (Ohio State Univ. Herb.).

Florida: Jacksonville, *Curtiss* 4637 (Hitchcock Herb.), *J. D. Smith* 570; Lake City, *Hitchcock* 1024; Apalachicola, *Biltmore Herb.* 6204a; Seville, *Curtiss* 6610; Titusville, *Chase* 3964; *Hitchcock* 766½; Grasmere, *Combs* 1164; Eustis, *Chase* 4051½, *Hitchcock* 792, 811, *Nash* 781; Sanford, *Hitchcock* 782; Tampa, *Hitchcock* 930½; Wimauma, *Hitchcock* 979; Arcadia, *Hitchcock* 855; Kalamazoo, *Hitchcock* 765½; Lakeland, *Hitchcock* 838½, 840; Braidentown, *Hitchcock* 955, 972, *Tracy* 6716; Johns Pass, *Tracy* 7186; Jensen, *Hitchcock* 735, 748; Myers, *Chase* 4163, *Hitchcock* 910, 918, Lee Co. Pl. 470; Miami, *Hitchcock* 630; without locality, *Rugel* 443.

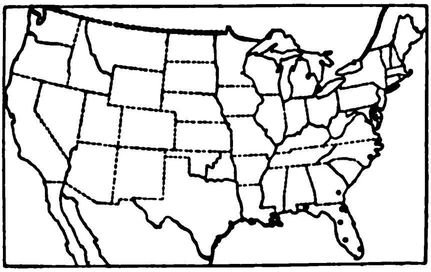


Fig. 310.—Distribution of *P. webberianum*.

167. Panicum patentifolium Nash.

Panicum patentifolium Nash, Bull. Torrey Club **26**: 574. 1899. "Type collected by the writer at Eustis, Lake Co., Florida, March 12–31, 1894, no. 72, in dry sand in a scrub hammock." The type, in Nash's herbarium, is the vernal form with two autumnal culms of the preceding year attached; all the blades are narrow, even the basal ones not over 4 mm. wide.

DESCRIPTION.

Vernal form often purplish throughout; culms several to many in a tuft, slender and wiry, widely decumbent-ascending, 25 to 55 cm. high, minutely puberulent or nearly glabrous; sheaths much shorter than the elongated internodes, a puberulent ring at the summit, otherwise glabrous or nearly so; blades stiffly spreading, 2.5 to 8 cm. long, 2 to 5 mm. wide, glabrous, acuminate, narrowed and sometimes ciliate toward the base; panicles commonly rather short-exserted, 3 to 7 cm. long, about half as wide, the branches few, ascending; spikelets 2.4 to 2.6 mm. long, 1.3 mm. wide, obovate, turgid; first glume one-third to half as long as the spikelet, obtuse or subacute; second glume and sterile lemma puberulent or nearly glabrous, the glume slightly shorter than the fruit and sterile lemma; fruit 2 mm. long, 1.2 mm. wide, elliptic, smooth and shining, minutely puberulent at the apex.

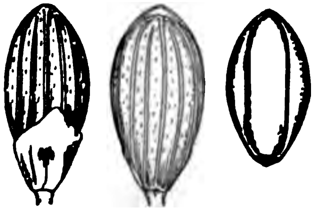


Fig. 311.—*P. patentifolium*. From type specimen.

Autumnal form decumbent or spreading, branching from the middle and upper nodes, the branches appressed and somewhat elongated, the secondary branchlets shorter and more or less fascicled, not greatly reduced; winter rosettes appearing late, inconspicuous, the narrow blades ascending.

This species differs from *P. webberianum* in the more slender culms, narrower, spreading culm blades, absence of the large basal blades, and less turgid spikelets in which the fruit is smooth and shining.

DISTRIBUTION.

Dry sand, especially in "scrub," Georgia to Florida and Mississippi.

GEORGIA: Dock Junction, *Ricker* 963 in part.

FLORIDA: St. Augustine, *Ricker* 945; Gainesville, *Chase* 4245; Cedar Key, *Combs* 777, 778; Eustis, *Chase* 4051, 4058, 4088, *Hitchcock* 796, 802, *Nash* 52, 72; Titusville, *Chase* 4028, 4029, *Hitchcock* 767; Ormond, *Hitchcock* 563; Clearwater, *Tracy* 6702; Jensen, *Hitchcock* 730; Braidentown, *Combs* 1288, 1333, *Hitchcock* 969, 970, 971; East Pass, *Tracy* 6350; Mary Esther, *Tracy* 9139; Tampa, *Hitchcock* 930; Arcadia, *Hitchcock* 856; Sebastian, *Hitchcock* 755; Myers, *Chase* 4163½, 4170, *Hitchcock* 915½.

ALABAMA: Fort Morgan, *Tracy* 7174.

MISSISSIPPI: Biloxi, *Kearney* 330 in part.

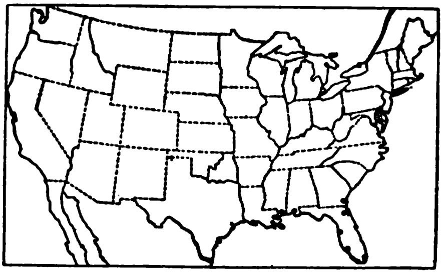


FIG. 312.—Distribution of *P. patentifolium*.

Oligosanthia.—Culms rather stout, usually erect; sheaths more or less hirsute, villous, or sometimes glabrous; ligules inconspicuous except in *P. ravenelii*; blades firm, not over 2 cm. wide, usually narrower; spikelets about 3 to 4 mm. long, obovate, turgid, usually papillose-hirsute, strongly 7 to 9-nerved. Autumnal form with branches more or less crowded toward the summit.

Nodes bearded; blades velvety-pubescent beneath.
  Plants lax, soft-velvety throughout; spikelets not over 3 mm. long .... 169. *P. malacophyllum.*
  Plants stiff, pubescence harsh; spikelets about 4 mm. long .... 173. *P. ravenelii.*
Nodes not bearded (or but obscurely so in *P. wilcoxianum*); blades not velvety.
  Panicle narrow, branches erect, or spreading only at anthesis; blades erect.
    Spikelets not over 3 mm. long; blades not over 6 mm. wide .... 168. *P. wilcoxianum.*
    Spikelets 3.7 to 4 mm. long; blades 8 to 20 mm. wide.
      Blades papillose-hispid .... 174. *P. leibergii.*
      Blades glabrous on both surfaces .... 175. *P. xanthophysum.*

  Panicle about as wide as long.
    Spikelets narrowly obovate, subacute; plants olivaceous, appressed-pubescent .... 172. *P. oligosanthes.*
    Spikelets broadly obovate, turgid, blunt; plants green, pubescence, if present, not appressed.
      Blades erect, not over 6 mm. wide; plants copiously hirsute throughout .... 168. *P. wilcoxianum.*
      Blades ascending or spreading, rarely less than 8 mm. wide, usually wider; plants not hirsute throughout.

Spikelets 3.2 to 3.3 mm. long; blades firm; sheaths or some of them more or less hispid .... 171. *P. scribnerianum.*
Spikelets not over 3 mm. long; blades rather thin; sheaths or some of them glabrous or sparsely hispid .... 170. *P. helleri.*

168. Panicum wilcoxianum Vasey.

Panicum wilcoxianum Vasey, U. S. Dept. Agr. Div. Bot. Bull. 8: 32. 1889. "Nebraska (Dr. T. E. Wilcox)." The type, in the National Herbarium, consists of several vernal culms beginning to branch, 13 to 17 cm. high, with scarcely mature primary panicles. On the sheet is written in Vasey's hand, "Panicum Wilcoxianum, Vasey n. sp., Niobrara Ft., Nebraska. Dr. T. E. Wilcox, 1888."

DESCRIPTION.

Vernal form dull green; culms usually in dense tufts, erect, 10 to 25 cm. high, copiously papillose-hirsute, as are the rather loose, usually overlapping sheaths; ligules about 1 mm. long; blades firm, erect or ascending, 5 to 8 cm. long, 3 to 6 mm. wide, broadest toward the base (this scarcely wider than the wide sheath), commonly involute-acuminate, long-hirsute on both surfaces; panicles finally exserted, often equaled or exceeded by the upper blades, 2 to 5 cm. long, about half as wide, or sometimes more expanded at anthesis, rather densely flowered; spikelets 2.7 to 3 mm. long, 1.5 mm. wide, obovate-elliptic, papillose-pubescent; first glume about one-third as long as the spikelet, pointed or obtuse; second glume slightly shorter than the fruit and sterile lemma; fruit 2.4 to 2.5 mm. long, 1.3 to 1.4 mm. wide, elliptic.

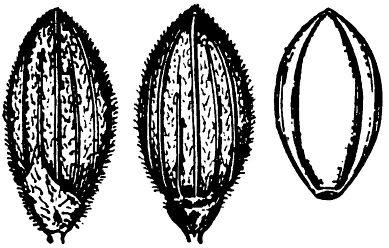


FIG. 313.—*P. wilcoxianum.* From type specimen.

Autumnal form branching from all the nodes, forming bushy tufts with rigid, erect blades much overtopping the reduced panicles; branches appearing early, usually before the maturity of the primary panicles; secondary spikelets usually more turgid than those of the primary panicles.

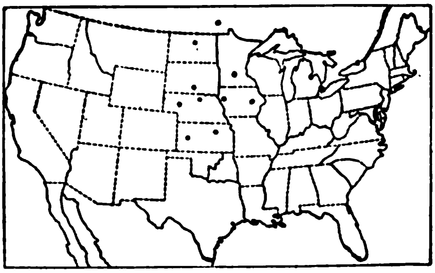


FIG. 314.—Distribution of *P. wilcoxianum.*

DISTRIBUTION.

Prairies, Manitoba to North Dakota and south to Iowa and Kansas.

MINNESOTA: Winona, *Holzinger* 28 in part (Biltmore Herb.).
MANITOBA: Sewell, *Macoun* 13227.
NORTH DAKOTA: Towner, *Lunell* in 1908.
SOUTH DAKOTA: Brookings, *Williams* in 1891, *E. N. Wilcox* 14; Roberts County, *S. D. Agr. Col. & Exp. Sta.* 4167; Rosebud, *Wallace* in 1896; Jamesville, *Bruce* 80.
IOWA: Missouri Valley, *Pammel* 3198; Gilbert Station, *Carver* in 1894.

Nebraska: Niobrara Fort, *T. E. Wilcox* in 1888; Johnstown, *Bates* 1084; Thedford, *Rydberg* 1308; Weigand, *Clements* 2683.

Kansas: Manhattan, *Hitchcock* 2505, Pl. Kan. 879; Courtland, *Hitchcock* in 1892.

Colorado: Without locality, American Plains Flora, *Hall* 231 in 1863 (Mo. Bot. Gard. Herb.).

169. Panicum malacophyllum Nash.

Panicum scoparium minor[*us*] Scribn. Tenn. Agr. Exp. Sta. Bull. **7**: 48. 1894. "Middle Tennessee (Gattinger)." The type, in the herbarium of the University of Tennessee, consists of four branching culms with a primary panicle from which the spikelets have fallen and numerous secondary panicles with pilose branchlets and spikelets. On the accompanying label, which reads "Panicum scoparium Lam. Cedar Glades, Lavergne, Tennessee. Autumnal form 7 VII. '81. Legit Dr. A. Gattinger," is written in Scribner's hand "var. minor," and this is the only Gattinger and the only Tennessee specimen so marked by him. No specimen of *P. scribnerianum*[a] can be found which was referred by Scribner to his *P. scoparium* var. *minor*, while a specimen collected by Coville, Mountain Park, Arkansas, in 1887, corresponding to the above Gattinger specimen (that is *P. malacophyllum* Nash), is marked by him "*Panicum scoparium* Lam. var. *minor* Scribn." The description applies to the species represented by the Gattinger specimen except as to the panicle and spikelets: "Panicle branches and spikelets nearly smooth, or (subvar. *pilosum*) densely pilose hairy." Only the Gattinger specimen is cited and this, marked by Scribner as noted above, has pilose spikelets and panicle branches. No specimen can be found marked with the subvarietal name. Were it not that Scribner wrote "var. *minor*" on two specimens of *P. malacophyllum* Nash and on nothing else, the Gattinger citation might possibly be taken to refer to "subvar. *pilosum*." It would appear that the author[b] confused *P. scribnerianum* and *P. malacophyllum;* that his description, drawn up from the material in his herbarium, was made to cover both, but more especially the common form, but that, having no Tennessee specimens of the common form he cited a specimen of the form he did have from Tennessee. The author's remark that "this is the most widely distributed and best known form of the species" bears out this conclusion.

Panicum malacophyllum Nash, Bull. Torrey Club **24**: 198. 1897. "Type collected by Mr. B. F. Bush on May 19, 1895, at Sapulpa, Indian Territory, No. 1228." The type, in Nash's herbarium, consists of two early autumnal culms 28 and 35 cm. high, with mature primary panicles.

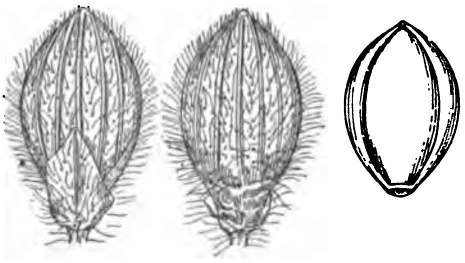


Fig. 315.—*P. malacophyllum*. From type specimen.

DESCRIPTION.

Vernal form velvety or velvety-pilose throughout; culms slender, few to several in tufts, 25 to 70 cm. high, more or less geniculate at base with arched internodes, ascending or spreading, papillose-pilose with soft, reflexed hairs, the nodes retrorsely bearded;

---

[a] See discussion on the type of *P. scribnerianum*.

[b] An examination of the specimens of this group in Scribner's herbarium shows that at that time his idea of true *P. scoparium* Lam. was *P. ravenelii*, on a sheet of which he had written "Certainly *P. scoparium* Ell., a form which suggests close relationship with *P. Walteri* Poir. (*P. latifolium* Mx.)." Accepting Elliott's interpretation of Lamarck's species Scribner names this form var. *genuinum;* his var. *pauciflorum* (based on *P. pauciflorum* Ell.) is *P. oligosanthes* Schult.; his specimens of *P. scribnerianum*, ten in all (none of them from Tennessee), are all marked in Scribner's writing *P. scoparium* Lam., without particular comment, and none as stated above is marked "var. minor."

sheaths loose, shorter than the internodes, usually less copiously pilose than the culm; ligules 1 to 1.5 mm. long; blades spreading or ascending, 7 to 10 cm. long, 6 to 12 mm. wide, tapering to the rounded base, acuminate, rather thin, velvety on both surfaces, ciliate at least toward the base; panicles usually short-exserted, 3 to 7 cm. long, at first narrow, the lower branches finally spreading, with short, spikelet-bearing branchlets in the axils; spikelets 2.9 to 3 mm. long, 1.5 to 1.7 mm. wide, elliptic-obovate, obscurely pointed, turgid at maturity, papillose-pilose; first glume about one-third as long as the spikelet; second glume and sterile lemma equaling the fruit at maturity; fruit 2.2 mm. long, 1.5 mm. wide, elliptic.

Autumnal form spreading, freely branching from the middle and upper nodes before the maturity of the primary panicle, at length forming bushy, topheavy clumps with reduced blades and numerous secondary panicles.

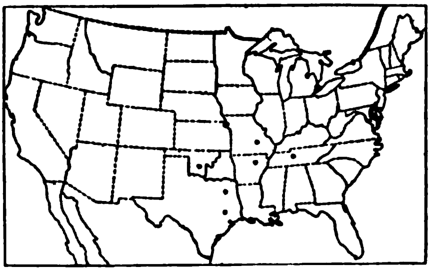


FIG. 316.—Distribution of *P. malacophyllum.*

DISTRIBUTION.

Sandy woods, Tennessee and Missouri to Oklahoma and Texas.

MISSOURI: Warrenburg, *Stigall* 8.

TENNESSEE: Nashville, *Gattinger* in 1880; Lavergne, *Gattinger* in 1881 and 1882.

ARKANSAS: Mountain Park, *Coville* in 1887; Prescott, *Bush* 263.

TEXAS: Dallas, *Bush* 642, *Reverchon* 1831; Weatherford, *Tracy* 7942; Denison, *Bebb* 2670 (Hitchcock Herb.).

OKLAHOMA: On the False Washita, *Palmer* 383 in 1868; Wister, *Hitchcock* 578.

170. Panicum helleri Nash.

Panicum helleri Nash, Bull. Torrey Club **26**: 572. 1899. "Collected at Kerrville, Kerr Co., Texas, by A. A. Heller, May 14–21, 1894, No. 1759. Differs from *P. pernervosum* in the pubescent culm and sheaths, the broader blades of a different shape and the narrow spikelets which are usually sparsely pubescent." The type,in Nash's herbarium, is a tuft of five vernal culms 24 to 39 cm. high, the lower nodes subgeniculate; panicles immature, scarcely exserted, the upper spikelets well developed but not mature, 3 mm. long, 1.5 mm. wide, bearing a few scattered hairs; papillæ on the sheaths not prominent; lower internodes sparsely ascending-pilose, the upper short-pubescent, as frequently found in *P. scribnerianum*. The blades are 6 to 12 mm. wide, while those of the type of *P. pernervosum* are 5 to 7 mm. wide, but both are of the same shape, broadest in the middle instead of near the base, as in *P. scribnerianum*.

Panicum pernervosum Nash, Bull. Torrey Club **26**: 576. 1899. "Type collected by Elihu Hall in woods at Houston, Texas, April 16, 1872, No. 830." The type, in the herbarium of the New York Botanical Garden, consists of two vernal plants with culms 27 and 34 cm. high, and an extra piece of culm with a panicle. The culms are glabrous, the sheaths ciliate on the margin, otherwise glabrous, except one which has a few hairs near the summit. The panicles are mature and the spikelets more turgid than in the type of *P. helleri*, being 3 mm. long and 1.7 mm. wide. A few of them bear a few scattered hairs.

DESCRIPTION.

Vernal form in clumps of few to several culms, usually somewhat bluish light green; culms 25 to 60 cm. high, slender, ascending or spreading, the lower internodes appressed-pilose, the upper often glabrous; sheaths sparsely papillose-hispid to glabrous, the papillæ often without hairs as in *P. scribnerianum*, ciliate on the margin; ligules about 1 mm. long; blades ascending or spreading, measuring about the same as those of *P. scribnerianum*, but broadest about the middle, rather thin, glabrous on both surfaces or pubescent beneath, ciliate toward the base; panicles finally rather long-exserted, 6 to 12 cm. long, about three-fourths as wide, more open and loosely flowered than in *P. scribnerianum;* spikelets 2.9 to 3 mm. long, 1.6 to 1.7 mm. wide, obovate, turgid, blunt, glabrous, or with few scattered hairs; first glume about one-third the length of the spikelet, acute; second glume and sterile lemma subequal, slightly exposing the fruit at maturity, strongly nerved; fruit 2.4 to 2.5 mm. long, 1.5 to 1.6 mm. wide, oval, obscurely apiculate.

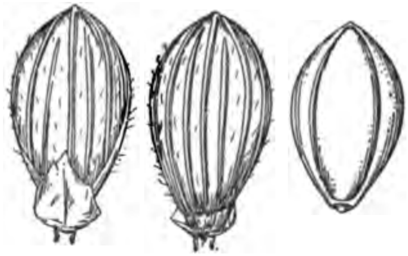


FIG. 317.—*P. helleri.* From type specimen.

Autumnal form branching at all but the lowest nodes, forming loose sprawling tufts, the branches somewhat divaricate, with sheaths more commonly pubescent than those of the primary culm, the blades widely spreading, not much reduced, the long-pediceled spikelets rather conspicuous among the foliage.

This species is closely related to *P. scribnerianum*, and many specimens are but doubtfully differentiated. As here distinguished, the smaller spikelets, thinner blades tapering to both ends, and the lax habit, taken in combination, have been used to separate *P. helleri*. As in *P. scribnerianum* little weight can be given to pubescence or lack of it, hispid and glabrous sheaths being found on the same plant, as in *Bush* 803 and *Hitchcock* 1173, though *P. helleri* is more commonly nearly glabrous than is *P. scribnerianum*. Reverchon's no. 2857 is probably referable to this species, but the pubescence of culms, sheaths, and lower surface of blades and the long hairs mixed with the short ligule show affinity to *P. oligosanthes*. The spikelets are 3 mm. long, too immature to show turgidity.

A few specimens are intermediate in the size of the spikelets. In *Harvey* 17 and *Hitchcock* 1173 the spikelets are 3.1 to 3.2 mm. long; and *Hitchcock* 1223, with spikelets 3.3 mm. long, is referred here since the specimen shows the sprawling habit of *P. helleri*.

DISTRIBUTION.

Open woods and prairies, Missouri and Oklahoma to Louisiana and New Mexico.

MISSOURI: Sheffield, *Bush* 803, 3903; Levasy, *Bush* 1685; Courtney, *Bush* 1710, 3893.

ARKANSAS: Fulton, *Bush* 2529; northern Arkansas, *Harvey* 17.

LOUISIANA: Cameron, *Tracy* 8419.

TEXAS: Dallas, *Bush* 705, *Reverchon* 1074 in part, 2444; Dallas County, *Reverchon* 2342, 2344, 2345; Denison, *Bebb* 1430; Weatherford, *Tracy* 7949; Corsicana, *Reverchon* 2855 in part; Grand Saline, *Reverchon* 4138; Terrell, *Warburton* 2; Waller, *Hitchcock* 1173, 1179, 1186, 1212; Waller County, *Thurow* in 1898; Houston, *Bebb* 1278, *Hall* 830, *Nealley* in 1887; Galveston, *Plank* 82; Virginia Point, *Bray* 33; Kerrville, *Heller* 1759, *Smith* in 1897; Burnet, *Plank* 3; Velasco, *Smith* in 1897; Victoria, *Tracy* 8870; Kingsville, *Tracy* 8885; without locality, *Buckley* in 1881.

OKLAHOMA: On the False Washita, *Palmer* 382 in 1868.

NEW MEXICO: Mogollon Mountains, *Metcalfe* 354.

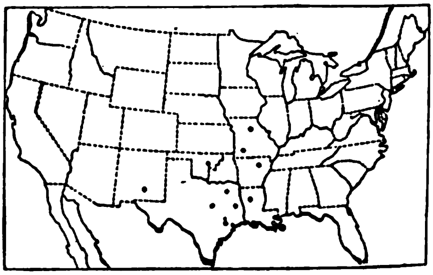


FIG. 318.—Distribution of *P. helleri.*

171. Panicum scribnerianum Nash.

Panicum macrocarpon Torr. Fl. North. & Mid. U. S. 143. 1823, not LeConte 1819. "HAB. On the banks of the Connecticut River, near Deerfield, Massachusetts. Sent to me by *Dr. Cooley.*" The type, in herbarium of Columbia University, is a single culm with terminal panicle. It is labeled in Torrey's hand "*Panicum macrocarpon**," followed by a brief diagnosis, and "Near Deerfield, Mass. Dr. Cooley." On the same sheet was mounted the specimen of *P. latifolium*, which is taken as the type of *P. macrocarpon* LeConte.[a] Torrey makes no mention of *P. macrocarpon* LeConte, published a few years earlier in his Catalogue of the Plants of New York.

Panicum scribnerianum Nash, Bull. Torrey Club **22**: 421. 1895. This is proposed as a new name without description, the following citations being given: "*Panicum scoparium* S. Wats. in A. Gray, Man. Ed. 6, 632. 1890. Not Lam. *Panicum scoparium* var. *minor* Scribn. Bull. Univ. Tenn. **7**: 48. 1894. Not *P. capillare* var. *minor* Muhl. 1817." The author does not state upon which of these two the new name is based, but since it "is proposed in honor of Prof. F. L. Scribner, who was the first to indicate its difference from *P. scoparium* Lam.," it seems evident that the intention is to raise Scribner's variety to specific rank, changing the name because of *P. capillare* var. *minor* Muhl. But examination of Scribner's type[b] shows that it is not the species described as *P. scoparium* in Gray's Manual and as *P. scribnerianum* by Nash in the Illustrated Flora,[c] Britton's Manual,[d] and Small's Flora.[e] Owing to the confusion and uncertainty arising from Scribner's citing a specimen which disagrees in part with his description, it seems best to take the first citation given by Nash as the basis of *P. scribnerianum*, excluding the reference to *P. scoparium* var. *minor*.

Panicum scoparium S. Wats.; Nash, Bull. Torrey Club **22**: 421. 1895. As synonym under *P. scribnerianum* Nash. The name is cited by Nash as "S. Wats. in A. Gray Man. Ed. 6, 632. 1890. Not Lam.," but Watson did not publish this name, since misapplication of a name does not constitute publication. The description of "*P. scoparium* Lam." [misapplied] in Gray's Manual, ed. 6, is identical with that of "*P. pauciflorum* Ell.?" of previous editions back to the first. In the first edition[f] the range is given as "N. Pennsylvania (*Carey*) and W. New York to Michigan." The Carey specimen, in the Gray Herbarium, is a single branching plant with hispid sheaths, a primary panicle, destitute of spikelets, and two secondary panicles with scarcely mature spikelets. The accompanying label reads: "Panicum n. sp.? pauciflorum Ell.? Wysox. Penna. J. Carey, July 1836." This specimen we take as the type of *P. scribnerianum*.

DESCRIPTION.

Vernal form in clumps of few to many culms, 20 to 50 cm. high, erect or ascending, often geniculate at base, glabrous or harshly puberulent or sometimes ascending papillose-pilose; sheaths rather loose, conspicuously striate, ciliate on the margin, ascending-pubescent between the nerves and papillose-hispid with spreading or ascending hairs to nearly glabrous, the papillæ often without hairs; ligules about 1 mm. long; blades ascending or erect, 5 to 10 cm. long, 6 to 12 mm. wide, usually firm, acuminate, rounded and ciliate at base, glabrous on the upper surface, appressed-pubescent to glabrous beneath; panicles short-exserted, 4 to 8 cm. long, rarely longer, two-thirds to three-fourths as wide, the flexuous branches ascending; spikelets 3.2 to 3.3 mm. long, 2 mm. wide, obovate, turgid, blunt, sparsely pubescent to nearly glabrous; first glume about one-third the length of the spikelet, acute; second glume and sterile lemma subequal, barely or scarcely equaling the fruit at maturity, strongly nerved; fruit 2.8 to 2.9 mm. long, 1.8 to 1.9 mm. wide, broadly elliptic, minutely apiculate.

---

[a] See note under *P. latifolium* L., page 314.

[b] See notes on *P. scoparium minus* Scribn. under *P. malacophyllum* Nash, page 280.

[c] Britt. & Brown, Illust. Fl. **1**: 118. 1896.

[d] Man. 87. 1901.

[e] Fl. Southeast U. S. 103. 1903.

[f] A. Gray, Man. 613. 1848.

Autumnal form branching from the middle and upper nodes at about the maturity of the primary panicle; the branches longer than the internodes, and late in the season producing crowded branchlets with ascending, not greatly reduced, blades and small, partially included, panicles from their upper nodes.

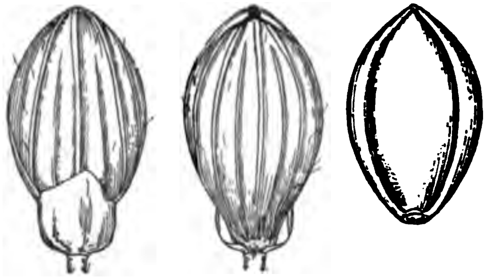


FIG. 319.—*P. scribnerianum.* From type specimen.

This species is very variable in the matter of pubescence. An unusually hispid Washington specimen, *Elmer* 763, was considered worthy of varietal rank by Scribner and Merrill and bears a herbarium name, but *Moffatt* 1863, Miller, Indiana, is quite and others nearly as hispid, while other Pacific coast specimens are not more hispid than eastern specimens. Glabrous and hispid sheaths are commonly found on the same specimen in this species. A few Mississippi specimens with blades softly pubescent beneath and spikelets 3.2 to 3.6 mm. long, suggest an approach to *P. ravenelii* Scribn. & Merr. These are: Jackson, *Hitchcock* 1295, 1296; Starkville, *Tracy* 42, 1752.

DISTRIBUTION.

Sandy soil or dry prairies, Maine, Ontario, and westward to the Pacific; south to Maryland and Arizona.

MAINE: South Berwick, *Parlin* in Harvey, Maine Weeds 1245.

NEW HAMPSHIRE: Walpole, *Fernald* 280 (Gray Herb.).

VERMONT: Westminster, *Robinson* in 1898.

MASSACHUSETTS: Wellesley, *Smith* 731; Ipswich, *Oakes;* Essex County, *Conant* in 1881.

CONNECTICUT: Oxford, *Harger* in Kneucker Gram. Exs. 425; Rocky Hill, *Wilson* 1256; Farmington, *Bissell* 5563; Southington, *Andrews* 51.

RHODE ISLAND: Providence, *Collins* in 1887 (Brown Univ. Herb.).

NEW YORK: Ithaca, *Ashe.*

ONTARIO: Sarnia, *Macoun* 26328; Sandwich, *Macoun* 26329.

NEW JERSEY: Glenlock, *Heritage* in 1897; Morris Plains, *Mackenzie* 1611; Passaic County, *Nash* in 1893.

PENNSYLVANIA: Safe Harbor, *Porter* in 1864; Germantown, *Stone* 4 in 1889; Easton, *Porter* in 1895, 1896, and 1898.

OHIO: Erie County, *Mertz* 147; Cedar Point, *York* 6789; Bowling Green, *Kellerman* 6894.

INDIANA: Miller, *Moffatt* 1863, *Umbach* in 1897; Elston, *Dorner* 88.

ILLINOIS: Hanover, *Gleason & Gates* 2598; Beach, *Umbach* 2365; Chicago, *Chase* in 1896; Joliet, *Skeels* 250; Romeo, *Umbach* 1704; Starved Rock, *Chase* 1607, *Greenman, Lansing & Dixon* 156; Wady Petra, *V. H. Chase* 922; Marshall County, *V. H. Chase* 1792; Galva, *V. H. Chase* 1749; Peoria, *McDonald* 32.

MICHIGAN: Grand Rapids, *Crozier;* without locality, *Wheeler* 97.

MINNESOTA: Fort Snelling, *Mearns* 771; Spring Grove, *Rosendahl* 260; Minneapolis, *Sheldon* in 1895.

North Dakota: Norfolk, *Griffiths* 871.

South Dakota: Lead City, *Rydberg* 1098; Rosebud, *Wallace* 12.

Iowa: Ames, *Ball* 178; Iowa City, *Somes* 167, 229.

Nebraska: Weeping Water, *Williams* 3009; Thedford, *Rydberg* 1279, 1493; Fort Niobrara, *T. E. Wilcox* in 1890; Mullen, *Rydberg* 1604.

Missouri: Wayne County, *Eggert* 234; Carter County, *Eggert* 297; St. Louis, *Eggert* 249; Washington County, *Eggert* 295; Monteer, *Bush* 722, 733 in part, 4653; Independence, *Bush* 729, 740; Watson, *Bush* 737; Dodson, *Bush* 1659; Arlington, *Kellogg* in 1903; Allenton, *Kellogg* in 1903; Swan, *Bush* 4568; Westport, *Bush* 4021; Vale, *Bush* 3933.

Kansas: Osborne City, *Shear* 85; Manhattan, *Hitchcock* 2383, 2502, 2511, 2519, 2525, 3854, Pl. Kan. 571, 571a, 921.

Delaware: Centerville, *Commons* 281, 282, *Chase* 3618.

Maryland: Glen Echo, *House* 831; High Island, *Ward* in 1879; Great Falls, *Chase* 2865.

District of Columbia: *Chase* 3808, *Steele* in 1901, *Ward* in 1881 and 1883.

Tennessee: Knoxville, *Ruth* 74 in 1898.

Arkansas: Benton County, *Plank* 48a, 93.

Texas: Denison, *Bebb* 2715 (Hitchcock Herb.); without locality, *Johnson* in 1886.

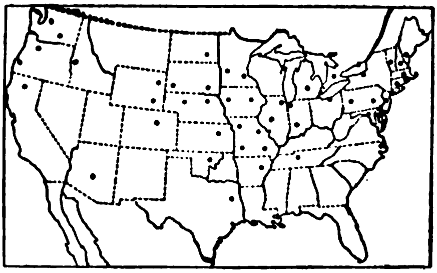


Fig. 320.—Distribution of *P. scribnerianum*.

Oklahoma: Limestone Gap, *Butler* 19; Sapulpa, *Bush* 1216, 1222; Flora, *Bebb* 2167; Walker, *Bebb* 1459.

Wyoming: Cambria Canyon, *A. Nelson* 2524; Inyankara Creek, *Williams* 2577; Devils Tower, *Griffiths* 548; Whalen Canyon, *A. Nelson* 516.

Idaho: Nez Perces County, *Sandberg, Heller & MacDougal* in 1892.

Washington: Wawawai, *Elmer* 763; Klickitat County, *Suksdorf* in 1882 and 1883; Ophir, *Elmer* 509; Thurston County, *Heller* 4058; Roy, *Hunter* 604a; Walla Walla, *Wilkes* Expl. Exped. 946.

British Columbia: Chilliwack Valley, *Macoun* 26333, 77230; Lake Osoyoos, *Macoun* 77231; Vancouver Island, *Macoun* 29297.

Oregon: Cascades, *Kellogg & Harford* 1085; Cache Bar, *Sheldon* 8331; Coos County, *Hitchcock* 2836; Sauvies Island, *Howell* 63; Snake River at mouth of Cache Creek, *Sheldon* 8194; without locality, *Hall.* Pl. Oreg. 672.

Colorado: Fort Collins, *Baker* 36.

Arizona: Willow Spring, *Palmer* 561 in 1890; White Mountains, *Griffiths* 5401.

California: Castle Crag, *Hitchcock* 3074.

172. Panicum oligosanthes Schult.

Panicum pauciflorum Ell. Bot. S. C. & Ga. 1: 120. 1816, not R. Br. 1810. "In Georgia, not very rare." The type, in the Elliott Herbarium, is a single culm beginning to branch, with five leaves and an exserted panicle 6 cm. long and 6.5 cm. wide. The accompanying label reads: "Panicum pauciflorum E. Hab: in humidis umbrosisque. Flor. Ap: Ma."

Panicum oligosanthes[a] Schult. Mant. 2: 256. 1824. Based on *P. pauciflorum* Ell., the name being changed because of *P. pauciflorum* R. Br.

---

[a] This name is incorrectly formed; the word should be *oliganthum*, but since the incorrect form has been sanctioned by usage it seems wiser not now to correct it, especially since to do so would invalidate *P. oliganthum* Schlecht. 1854.

Panicum scoparium angustifolium[a] Vasey, U. S. Dept. Agr. Div. Bot. Bull. **8**: 32. 1889. "South Carolina (Dr. Ravenel)" is the first specimen cited. This, which is taken as the type, is in the National Herbarium, and consists of several culms in the early branching state, with mature terminal panicles.

Panicum scoparium pauciflorum Scribn. Tenn. Agr. Exp. Sta. Bull. **7**: 48. 1894. Based on *P. pauciflorum* Ell.

DESCRIPTION.

Vernal form olivaceous, in loose tufts of few to several culms 35 to 80 cm. high, erect, often purplish, appressed-pubescent, especially below; sheaths shorter than the internodes or the lower longer, the papillose pubescence ascending; hairs of the ligule 1 to 2 mm. long, with longer ones intermixed; blades stiffly spreading or ascending, 6 to 14 cm. long, 5 to 8 (rarely 10) mm. wide, sharply acuminate, narrowed toward the base, glabrous on the upper surface or rarely with a few long hairs, harshly puberulent beneath, stiffly ciliate near the base; panicles finally long-exserted, 6 to 12 cm. long, about as wide, loosely flowered, branches usually stiffly ascending or spreading; spikelets long-pediceled, 3.5 to 4 mm. long, 1.7 to 1.9 mm. wide (smaller in exceptional specimens), oblong-obovate, subacute, sparsely hirsute; first glume less than half the length of the spikelet, acute; second glume slightly shorter than the fruit and sterile lemma; fruit 2.8 to 3 mm. long, 1.5 to 1.6 mm. wide, elliptic.

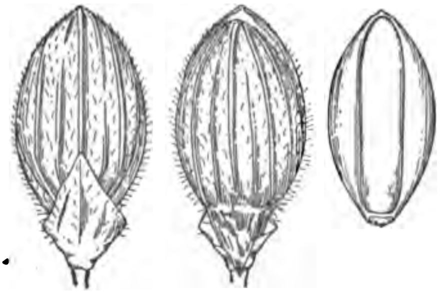


FIG. 321.—*P. oligosanthes*. From type specimen of *P. pauciflorum* Ell.

Autumnal form erect or spreading, sometimes topheavy-prostrate, branching sparingly from the lower, freely from the upper, nodes, late in the season the short branchlets aggregated at the summit of the branches, the crowded, reduced blades widely spreading, the panicles more or less included and reduced to a few spikelets, these commonly more turgid and blunt than those of the primary panicle.

In this species the spikelets vary more in size than usual in this group. The following specimens have spikelets only 3.2 to 3.3 mm. long: *Bebb* 1426, *Bush* 1225, *Hitchcock* 1194, *Kearney* 1386, *Reverchon* 1840, 4142, and *Thurow* in 1899. The shape of the spikelets as well as the other characters of these specimens are those of *P. oligosanthes*. A few specimens, however, appear to be intermediate between this and *P. scribnerianum*, having the narrow blades, appressed pubescence, and open, few-flowered panicles of *P. oligosanthes*, but very turgid, blunt spikelets, which, however, measure 3.5 to 3.7 mm. long. These are: *Tracy* 1754; *Bebb* 1389 and 2703, Denison, Texas; and *Hitchcock* in 1903, Wister, Oklahoma (the last two in Hitchcock Herb.).

DISTRIBUTION.

Sandy, usually moist woods, New Jersey to Illinois, south to Florida and Texas, mostly near the coast.

NEW JERSEY: Atsion, *Commons* 54.
INDIANA: Dune Park, *Hill* 201 in 1898.
ILLINOIS: [Wabash County?] *Schneck* in 1879.

---

[a] This is not based on *P. angustifolium* Ell. Vasey gives the latter species on page 29 of the same paper.

Delaware: Seaford, *Commons* in 1882; Greenbank, *Commons* in 1883; Lewes, *Hitchcock* 419, 582.

District of Columbia: *Steele* in 1899.

Virginia: Fort Monroe, *Vasey* in 1878 and 1883; Cape Henry, *Chase* 2912, 5435, *Kearney* 1400; Virginia Beach, *Hitchcock* 581, *Kearney* 1386, *Williams* 3110.

North Carolina: Wilmington, *Hitchcock* 418, 1457, 1459, 1460.

South Carolina: Aiken, *Hitchcock* 580, *Ravenel* in 1867, *Scribner* in 1894; Sumter, *Hitchcock* 579; Orangeburg, *Hitchcock* 20, 1410.

Georgia: Augusta, *Cuthbert* 1121, 1167, *Kearney* 216; Clarke County, *Harper* 146; Stone Mountain, *Hitchcock* 417.

Florida: Jacksonville, *Curtiss* 5864; Lake City, *Chase* 4276, 4283, *Combs* 163, *Hitchcock* 1014; Tallahassee, *Combs* 382; Gainesville, *Chase* 4207, 4260, *Combs* 742.

Alabama: Flomaton, *Hitchcock* 1055.

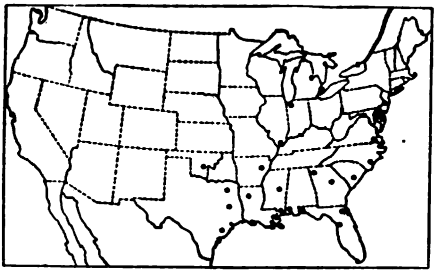


Fig. 322.—Distribution of *P. oligosanthes*.

Mississippi: Columbus, *Tracy* in 1896; Starkville, *Tracy* 1754; Waynesboro, *Kearney* 191; Biloxi, *Tracy* 3647; Mississippi City, *Hitchcock* 1106.

Arkansas: Benton County, *Plank* 73.

Louisiana: Calhoun, *Ball* 64, *Hitchcock* 1263, 1274½, 1293.

Texas: Dallas County, *Reverchon* 1841; Denison, *Bebb* 1389, 1426; Grand Saline, *Reverchon* 4142; Silver Lake, *Reverchon* 1840; Waller, *Hitchcock* 1194, *Thurow* in 1898 and 1899; Houston, *Bebb* 1245, *Nealley* in 1887; without locality, *Wright* (Gray Herb.).

Oklahoma: Sapulpa, *Bush* 1225.

173. Panicum ravenelii Scribn. & Merr.

Panicum scoparium major[us] Vasey, U. S. Dept. Agr. Div. Bot. Bull. **8**: 32. 1889 The author states, "We have only seen this from South Carolina (Dr. Ravenel)." The type, in the National Herbarium, consists of three immature vernal culms.

Panicum scoparium genuinum Scribn. Tenn. Agr. Exp. Sta. Bull. **7**: 48. 1894. "*P. scoparium* Lam., Ell." is cited, and, as it is evident that Scribner is designating Elliott's as the genuine *P. scoparium*, Elliott's specimen is considered the type.

Panicum ravenelii Scribn. & Merr. U. S. Dept. Agr. Div. Agrost. Bull. **24**: 36. 1901. Published as a new name for "*Panicum scoparium* of Ell. Sk. Bot. S. C. and Ga. **1**: 119. 1817. Not Lam. Encycl. **4**: 744. 1797." The type, in the Elliott Herbarium, is a single vernal culm with an immature panicle. No locality is cited by Elliott, and none is given on the label; the specimen is presumably from South Carolina.

This species was referred to *Panicum scoparium* by Elliott, as stated above, and also by Chapman.[a]

DESCRIPTION.

Vernal form in loose tufts, grayish olive green; culms 30 to 70 cm. high, erect or ascending, densely papillose-hirsute with ascending hairs, the nodes short-bearded; sheaths shorter than the long lower internodes, about equaling the short upper ones or overlapping, papillose-hirsute like the culm; ligules 3 to 4 mm. long; blades thick, ascending or spreading, 8 to 15 cm. long, 1 to 2 cm. wide, sharply acuminate, rounded at the base, glabrous on the upper surface, densely velvety-hirsute beneath, usually short-ciliate nearly to the apex; panicles short-exserted or included at the base, 7 to 12 cm. long, as wide or wider, loosely flowered, the branches finally spreading; spikelets 4 to 4.3 mm. long, 2 to 2.2 mm. wide, obovate, turgid and blunt, sparsely papillose-pubescent; first glume one-third to two-fifths the length of the spikelet, acute; second glume and sterile lemma subequal, scarcely equaling the fruit at maturity, strongly nerved; fruit 3.2 mm. long, 2 mm. wide, elliptic, minutely apiculate.

---

[a] Fl. South. U. S. 575. 1860.

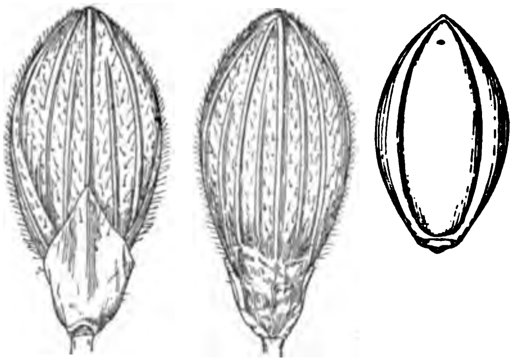


FIG. 323.—*P. ravenelii.* From type specimen.

Autumnal form more or less spreading, branching from the middle and upper nodes, the short branchlets crowded at the summit late in the season, the reduced blades ascending, overtopping the small panicles.

DISTRIBUTION.

Sandy or gravelly woods or open ground, Maryland to Missouri, Florida, and Texas.

MISSOURI: Swan, *Bush* in 1899.

DELAWARE: New Castle County, *Canby* (Field Mus. Herb.).

MARYLAND: Great Falls, *Chase* 3780; Riverdale, *Chase* 3796.

DISTRICT OF COLUMBIA: *Steele* in 1898 and 1900; *Ward* in 1881.

VIRGINIA: Danville, *Small & Heller* in 1891 (Biltmore Herb.).

NORTH CAROLINA: Wilmington, *Hitchcock* 420, 1463, 1489; Raleigh, *Chase* 3088; Chapel Hill, *Ashe.*

SOUTH CAROLINA: Aiken, *Ravenel;* Orangeburg, *Hitchcock* 1390; Keowee, *House* 2200.

GEORGIA: Cobb County, *Wilson* 31, 47; Thomson, *Bartlett* 1502.

FLORIDA: Apalachicola, *Biltmore Herb.* 2994*a*; Monticello, *Combs* 305; Chipley, *Combs* 602 in part; Lake City, *Chase* 4279, *Hitchcock* 1010.

TENNESSEE: Henderson, *Bain* in 1893 (Univ. Tenn. Herb.).

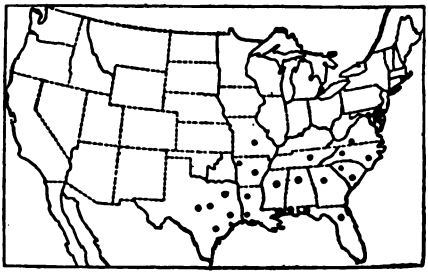


FIG. 324.—Distribution of *P. ravenelii.*

ALABAMA: Mobile County, *Mohr* 153; Flomaton, *Hitchcock* 1047; Auburn, *Hitchcock* 1334; Tuskegee, *Carver* 13.

MISSISSIPPI: Starkville, *Tracy* in 1888; Jackson, *Hitchcock* 1294; Mississippi City, *Hitchcock* 1107.

ARKANSAS: Little Rock, *Coville* in 1887; Fulton, *Bush* 2526; Benton County, *Plank* 56, 143; northwestern Arkansas, *Harvey* 31.

LOUISIANA: Calhoun, *Hitchcock* 1288; Shreveport, *Hitchcock* 1245.

TEXAS: Big Sandy, *Reverchon* 2390; Harvester, *Thurow* in 1898; Waller, *Hitchcock* 1187; without locality, *Nealley* in 1885, *Wright* 280 (Gray Herb.).

174. **Panicum leibergii** (Vasey) Scribn.

Panicum scoparium liebergii Vasey, U. S. Dept. Agr. Div. Bot. Bull. **8**: 32. 1889. "P. liebergii Scribn.)" is given as synonym, and "Plymouth County, Iowa (John Lieberg)" [error for Leiberg] is cited. The type, consisting of two vernal culms, is in Hitchcock's herbarium. The accompanying label reads: "Panicum Leibergii, Scribn. 1884. Plymouth Co., Iowa. 1878. Legit John Leiberg,", the specific name, author, and date being in Scribner's writing. On the sheet is written in Vasey's hand, "P. scoparium var. Leibergii V."

Panicum scribnerianum leibergii Scribn. U. S. Dept. Agr. Div. Agrost. Bull. **6**: 32. 1897. No synonym is cited and "South Dakota: Brookings (Wilcox 16)" is the only specimen mentioned. This name must however be considered a new combination based on *P. scoparium leibergii* Vasey. The Wilcox specimen agrees with that of Leiberg.

Panicum liebergii Scribn. in Britt. & Brown, Illust. Fl. **3**: 497. 1898. Based on "*Panicum scoparium* Lam. var. *Liebergii* Vasey." This name was first mentioned as a synonym under *P. scoparium liebergii* Vasey.[a]

DESCRIPTION.

Vernal form dull green, in clumps of few to several slender culms, 25 to 75 cm. high, erect from a more or less geniculate base, pilose to merely scabrous; sheaths shorter than the internodes, papillose-hispid with spreading hairs; ligules almost obsolete; blades ascending or erect, rather thin, 6 to 15 cm. long, 7 to 15 mm. wide, narrowed toward the rounded base, acuminate, papillose-hispid on both surfaces, often sparsely so above, papillose-ciliate from one-third to half their length; panicles finally long-exserted, 8 to 15 cm. long, less than half as wide, the flexuous branches narrowly ascending or somewhat spreading at anthesis; spikelets 3.7 to 4 mm. long, 1.8 to 2 mm. wide, oblong-obovate, turgid, strongly papillose-hispid with spreading hairs; first glume more than half the length of the spikelet, pointed, second glume and sterile lemma subequal, covering the fruit at maturity or the lemma slightly exceeding it; fruit 3 mm. long, 1.7 to 1.8 mm. wide, obovate-oval.

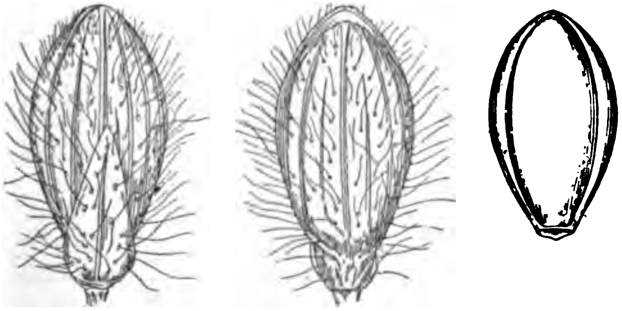


FIG. 325.—*P. leibergii*. From type specimen.

Autumnal form more or less leaning, sparingly branching from the middle and lower nodes late in summer, the branches mostly simple, erect, the blades scarcely reduced, usually exceeding the short-exserted panicles.

---

[a] U. S. Dept. Agr. Div. Bot. Bull. **8**: 32. 1889.

DISTRIBUTION.

Prairies, New York to Manitoba, south to Ohio and Kansas.

NEW YORK: Head of Seneca Lake (Gray Herb.).

ONTARIO: Squirrel Island, Lake St. Clair, *Dodge* 17, 20, 62, 84.

OHIO: Erie County, *Moseley* in 1897.

INDIANA: Lafayette, *Dorner* 35.

ILLINOIS: Naperville, *Umbach* 1669; Emington, *Wilcox* 129; Joliet, *Skeels* 334; Wady Petra, *V. H. Chase* 461, 1455; Knox County, *V. H. Chase* 1701; Peoria, *McDonald* 17; Champaign, *Waite* in 1888.

MICHIGAN: Hansens Island, Lake St. Clair, *Dodge* in 1899 (Hitchcock Herb.).

WISCONSIN: Racine, *Wadmond* 46; Elkhart Lake, *Hill* 91 in 1906.

MINNESOTA: Acton, *Frost* in 1892; St. Cloud, *Campbell* in 1887; Montevideo, *Moyer* in 1894; Spring Grove, *Rosendahl* 504, 538.

MANITOBA: Macgregor, *Macoun* 73004; Carberry, *Macoun* 73003.

NORTH DAKOTA: Fargo, *Bolley* 1865; Merrifield, *Brannon* 10; Leeds, *Lunell* in 1902.

SOUTH DAKOTA: Brookings, *E. N. Wilcox* 16, *Williams* 2228; Lake Hendricks, *Williams* in 1891; Simpson Park, *Griffiths* 836.

IOWA: Plymouth County, *Leiberg* in 1878; Armstrong, *Cratty* in 1900; Ames, *Ball & Sample* 16; Iowa City, *Somes* 236; Decatur County, *Fitzpatrick & Fitzpatrick* 36; New Albin, *Pammel* 932; Johnson County, *Shimek* 69.

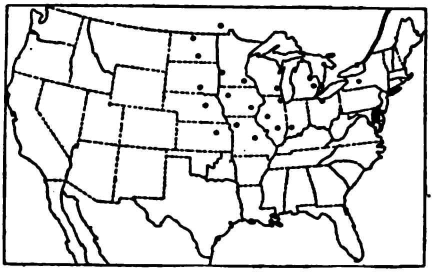


FIG. 326.—Distribution of *P. leibergii.*

NEBRASKA: Ponca, *Clements* 2523.

MISSOURI: Lees Summit, *Mackenzie* 297; Monteer, *Bush* 379, 730, 744, 2760; Dodson, *Bush* 1652; Levasy, *Bush* 1684.

KANSAS: Manhattan; *Hitchcock* 2504, 2518, Pl. Kan. 571b.

This species is listed in the Botany of Stevens's Report[a] as *P. clandestinum*, as shown by the specimen, without definite locality, in the National Herbarium.

175. Panicum xanthophysum A. Gray.

Panicum xanthophysum A. Gray, Gram. & Cyp. 1: no. 28. 1834. This was published in the set of exsiccatae, a printed description in Latin accompanying no. 28, the locality being given as "Pine Plains, near Oneida Lake, New-York." In the Gray Herbarium is a specimen, on the sheet of which is written in Dr. Gray's hand "Oneida Lake, Wood Creek barrens, P. xanthophysum Gray!" This specimen, which we consider the type, is a single culm with an overmature primary panicle, and a small secondary panicle. Dr. Gray apparently neglected to retain for himself a numbered set of this distribution of Gramineæ. The specimen of no. 28 in the Boott set in Gray Herbarium, and the other specimens of this number which we have seen agree with the above specimen. The species was later described by Gray[b] in English in a paper on "New or rare Plants of the State of New York."

Panicum xanthophysum forma *amplifolium* Scribn. in Brainerd, Jones & Eggleston, Fl. Vt. 104. 1900. "Dry sandy soil, Burlington, Vt. L. R. Jones, collector, August 31, 1893." The type, in the National Herbarium, consists of two specimens with overlapping sheaths and blades 1.5 to 2 cm. wide.

---

[a] A. Gray Pac. R. Rep. 12: 49. 1860.

[b] Ann. Lyc. N. Y. 3: 234. 1835.

DESCRIPTION.

Vernal form yellowish green, in loose tufts of few to many culms, 20 to 55 cm. high, erect or ascending, more or less scabrous; sheaths loose, about as long as the internodes or longer, sparsely papillose-pilose and ciliate at least toward the summit, rarely nearly glabrous; ligules 1 mm. long; blades erect or nearly so, rather thin, prominently nerved, 10 to 15 cm. long, rarely longer, 1 to 2 cm. wide, acuminate, slightly narrowed to the rounded papillose-ciliate base, otherwise glabrous, the uppermost blade not reduced, sometimes the largest; panicles finally long-exserted, 5 to 12 cm. long, very narrow, sometimes appearing almost racemose, few-flowered, the stiff branches erect or nearly so; spikelets 3.7 to 4 mm. long, 2 to 2.1 mm. wide, obovate, turgid and blunt at maturity, pubescent; first glume about half as long as the spikelet, pointed; second glume scarcely equaling the fruit and sterile lemma at maturity; fruit 2.9 to 3 mm. long, 2 mm. wide, obovate-oval, minutely umbonate.

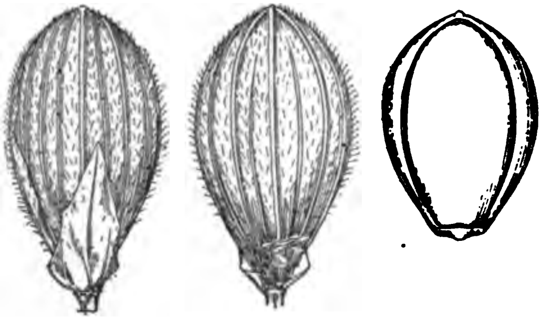


FIG. 327.—*P. xanthophysum*. From type specimen.

Autumnal form erect or ascending, branching from the second and third nodes, the branches erect, mostly simple, the blades not reduced, usually equaling the short-exserted panicles, the large, erect blades making the plant appear leafy in the middle.

The spikelets of the primary panicles sometimes perfect their grains. As stamens and stigmas are both frequently exserted, the fruitful spikelets in this species are not always cleistogamous as is commonly the case in Dichanthelium.

Three Minnesota specimens, *Campbell* 66, *Ostland* 1 and 2 in 1884, and an Ontario specimen, *Macoun* in 1865, seem to be intermediate between this species and *P. leibergii*. The first of these has the glabrous blades and strict panicles of *P. xanthophysum*, but the blades are only 5 to 7 mm. wide. The Ostland specimens represent vernal and autumnal forms; both have blades that are ciliate for half their length or more but otherwise glabrous; the panicles are looser as in *P. leibergii* and the pubescence of the spikelets, which are too immature to indicate amount of turgidity, is papillose-spreading as in that species; the autumnal specimen has broader blades and would be referred to *P. xanthophysum* unhesitatingly but for the intermediate vernal specimen.

DISTRIBUTION.

Sandy or gravelly soil, Quebec to Minnesota, south to Pennsylvania.

QUEBEC: Sorel, *Pringle* in 1879.

MAINE: Buckfield, *Allen* in 1877; Orono, *Fernald* 345; Madison, *Fernald* 521; South Berwick, *Fernald* 519; York, *Fernald* 520; Bangor, *Knight* in 1904; Cumberland, *Knowlton & Chamberlain* 500; East Auburn, *Merrill* 11; Chesterville, *Chase* 3295, 3300.

NEW HAMPSHIRE: Laconia, *Carter* 101d.

VERMONT: Burlington, *Jones* in 1893; Peacham, *Blanchard* in 1889; Vernon, *Grout* in 1895.

MASSACHUSETTS: Ashburnham, *Harris* in 1896 (N. E. Bot. Club Herb.).

CONNECTICUT: Stafford, *Graves* in 1903 (Gray Herb.).

New York: Oneida Lake, *Gray;* Lake George, *Vasey* in 1882; Schenectady, *Wibbe* in 1885; Danby, *Coville* in 1885; Cairo, *Nash* in 1893; Tripoli, *Burnham* in 1897.

Ontario: Belleville, *Macoun* in 1865; Galt, *Herriot* in 1898 and 1901; Algonquin Park, *Macoun* 22025.

Pennsylvania: Tannersville, *Brown* in 1901; without locality, *McMinn*.

Michigan: Keweenaw, *Farwell* 764; Alma, *Davis* in 1893.

Wisconsin: Rainbow Rapids, *Cheney* 1346; Mason, *Cheney* 4786; Webster, *Cheney* 3426.

Minnesota: Ramsey County, *Ostland* 1 and 2 in 1884; Lake Kilpatrick, *Ballard* in 1893; St. Cloud, *Campbell* 66.

Manitoba: Lake Winnepeg Valley, *Bourgeau* in 1857 (Gray Herb.).

Saskatchawan: *Bourgeau* in 1858 (Gray Herb.).

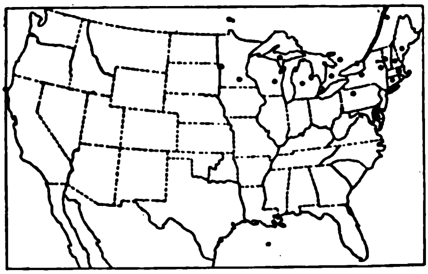


Fig. 328.—Distribution of *P. xanthophysum.*

Pedicellata.—Clums slender, more or less hirsute; ligules of short hairs; blades not over 6 mm. wide, ciliate; spikelets 3.5 to 4 mm. long, attenuate at base, papillose, 7 to 9-nerved. Autumnal form freely branching, the branches appearing before the maturity of the primary panicle; no distinct winter rosette formed.

This group of two species appears to be intermediate between the subgenus Dichanthelium and true Panicum. The plants bear a general resemblance to Oligosanthia but in the absence of a winter rosette and in the branching habit, especially of *P. nodatum,* they show a departure from Dichanthelium.

Culms erect or leaning; blades thin, 5 to 9 cm. long, narrowed toward the base..176. *P. pedicellatum.*
Culms decumbent; blades thick, not over 5 cm. long, not narrowed toward the base................................177. *P. nodatum.*

176. Panicum pedicellatum Vasey.

Panicum pedicellatum Vasey, U. S. Dept. Agr. Div. Bot. Bull. **8**: 28. 1889. "Texas, J. Reverchon." The type specimen, in the National Herbarium, *Reverchon* Texas Plants 1620, bearing the data "Rocky woods, Kimble Co. June," consists of two branching plants.

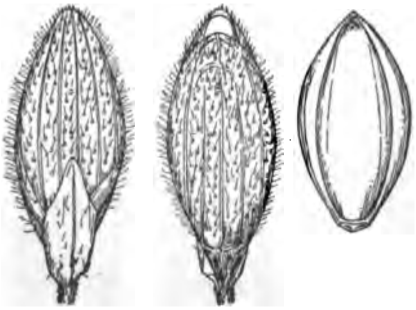


Fig. 329.—*P. pedicellatum.* From type specimen.

DESCRIPTION.

Vernal form in tufts of few to several erect or ascending culms from a short, knotted rootstock; culms slender, 20 to 50 cm. high, usually ascending-hirsute at least below, a few spreading hairs on the nodes; sheaths papillose, sparingly hirsute, ciliate on the margin; ligules dense, about 1 mm. long; blades ascending or spreading, 5 to 9 cm. long, 3 to 6 mm. wide, the margin toward the narrowed base sparsely ciliate with long hairs, both surfaces glabrous or sometimes minutely hispid; panicles 3 to 6 cm. long, about three-fourths as wide, the branches few, spreading or ascending; spikelets 3.5 to 3.7 mm. long, 1.4 mm. wide, elliptic, prominently papillose-hispid; first glume nearly or quite half the length of the spikelet, narrow, acute; second glume shorter than the fruit and sterile lemma at maturity; fruit 3 mm. long, 1.3 mm. wide, elliptic, subacute.

Autumnal form erect or leaning, branching from all but the uppermost nodes before the maturity of the primary panicle, the branches slightly divaricate, the blades and panicles not greatly reduced.

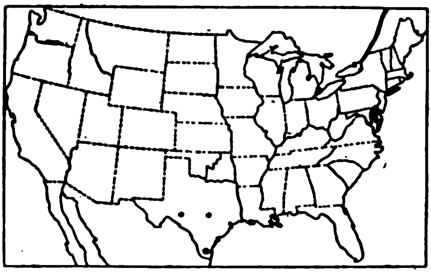


FIG. 330.—Distribution of *P. pedicellatum.*

DISTRIBUTION.

Dry woods and prairie, Texas.

TEXAS: Kimble County, *Reverchon* 1620; Kerrville, *Heller* 1726, 1736, 1766, *Smith* in 1897; Austin, *Hall* 834 [a] in part; Comanche Spring, *Lindheimer* 1265 in Mo. Bot. Gard. distr; "in the Sabines bottom," *Lindheimer* 158 (last two in Gray Herb.).

177. Panicum nodatum sp. nov.

DESCRIPTION.

Vernal form in tufts from a knotted crown; culms ascending or spreading, slender but hard and wiry, 25 to 35 cm. high, finely papillose, crisp-puberulent; sheaths shorter than the internodes, papillose-hispid between the strong nerves; ligules dense, scarcely 1 mm. long; blades firm, ascending, 3 to 5 cm. long, 3 to 6 mm. wide, broadest at the rounded base, abruptly acute, puberulent on both surfaces, papillose-ciliate with stiff hairs 2 to 3 mm. long; panicles 4 to 5 cm. long, half to two-thirds as wide, few-flowered, the few branches ascending; spikelets 4 mm. long, 1.7 mm. wide, pyriform, papillose-pubescent; first glume about one-third the length of the spikelet, acuminate; second glume slightly shorter than the fruit and sterile lemma; fruit 3 mm. long, 1.4 mm. wide, obovate-elliptic, minutely white-puberulent at the apex.

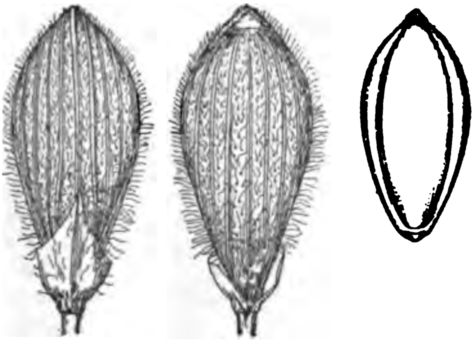


FIG. 331.—*P. nodatum.* From type specimen.

Autumnal form widely geniculate-decumbent, early branching from all but the uppermost node, the branches somewhat divaricate, equaling or exceeding the main culm, with numerous swollen nodes, the internodes 2 to 3 cm. long, the whole forming a loose tuft, the blades and panicles not reduced.

Type U. S. National Herbarium no. 592749, collected August 7, 1904, Sarita, Texas, by A. S. Hitchcock (no. 3865).

---

[a] This in the Gray Herbarium is numbered 835.

This species differs from *P. pedicellatum* in its stiffer, short-jointed culms, shorter, puberulent, prominently ciliate blades, and pyriform spikelets with a shorter first glume.

DISTRIBUTION.

Oak woods in sand dunes, southern Texas and northern Mexico; apparently rare.

TEXAS: Sarita, *Hitchcock* 3865.
MEXICO: Matamoros, *Berlandier* 988, 2418 (last two in Gray Herb.).

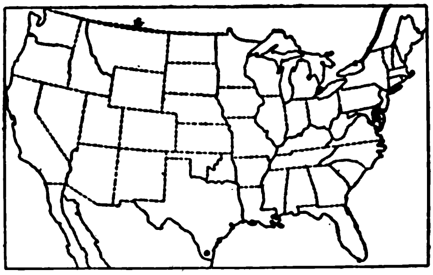


FIG. 332.—Distribution of *P. nodatum*.

Scoparia.—Vernal culms tall; blades flat, elongated, not over 1.5 cm. wide; ligules short; spikelets pointed, 7 to 9-nerved.

Pubescence soft-villous or velvety; spikelets abruptly pointed.
Vernal culms erect or ascending; plants velvety throughout; spikelets about 2.5 mm. long..................178. *P. scoparium*.
Vernal culms decumbent at base; the upper sheaths more or less glabrate; spikelets less than 2 mm. long.....179. *P. viscidellum*.
Pubescence when present not velvety.
Spikelets elliptic; fruit 2 mm. long.....................180. *P. aculeatum*.
Spikelets ovate; that is, broadest below the middle; fruit 2 mm. long or less.
Sheaths or some of them hispid, rarely glabrous; autumnal form with crowded branchlets.........181. *P. scabriusculum*.
Sheaths glabrous; autumnal form sparingly branching.182. *P. cryptanthum*.

178. Panicum scoparium Lam.

Panicum scoparium Lam. Encycl. **4**: 744. 1798. "Cette plante a été recueillie dans la basse Caroline par le citoyen Michaux." The type specimen, in the Lamarck Herbarium, is a part of a vernal culm with a single leaf and over-mature panicle. The accompanying label reads, "Panicum scoparium Lam. dict. donné par le C. Michaux."

Panicum pubescens Lam. Encycl. **4**: 748. 1798. The author refers to two specimens as follows: "J'ai vu de cette espèce un individu nain dans l'herbier de Vaillant; il l'avoit reçue de Sherard en 1721. Le citoyen Michaux l'a trouvée dans la Basse-Caroline." The first mentioned specimen is in the Paris Herbarium. It is some species of Brachiaria allied to *Panicum villosum* Lam. as described by Hooker.[a] The other specimen referred to is in the Michaux Herbarium and consists of two freely branching autumnal culms of *P. scoparium*. The accompanying label reads "Panicum pubescens Lam. Hab. in pratis sylvestribus Carolinae." Since Lamarck's description applies to the Michaux[b] rather than to the Sherard specimen we may consider the Michaux plant the type.

Panicum viscidum Ell. Bot. S. C. & Ga. **1**: 123. *pl. 7. f. 3.*[c] 1816. No specimen nor definite locality is cited. The type in the Elliott Herbarium is labeled: "Panicum viscidum mihi. Hab: in humidis." It consists of a single culm lacking the base, bearing several short branches and an over-mature primary panicle.

Panicum pauciflorum Bosc; Spreng. Syst. Veg. **1**: 313. 1825. This, together with *P. scoparium* Michx., is placed as a synonym under *P. pubescens* Lam. We have seen no authentic specimen.

---

[a] Fl. Brit. Ind. **7**: 34. 1896.

[b] See Hitchcock, Contr. Nat. Herb. **12**: 147. 1908.

[c] Plates 7 to 10 were issued with vol. 2. 1824.

Panicum laxiflorum pubescens Chapm. Fl. South. U. S. ed. 3. 586. 1897, not Vasey 1892. Based on *Panicum pubescens* Lam., though the description applies to *P. strigosum* Muhl., the species referred by Chapman to this variety.

DESCRIPTION.

Vernal plants grayish olive green, velvety-pubescent throughout except as noted; culms 80 to 130 cm. high, stout, erect or ascending, usually geniculate at base, the nodes villous with reflexed hairs, a glabrous, viscid ring below; sheaths about half as long as the long internodes, the velvety pubescence wanting on the back toward the summit, the surface here viscid when fresh; ligules 1 mm. long; blades rather thick, ascending or spreading, often reflexed late in the season, 12 to 20 cm. long, 10 to 18 mm. wide, long-acuminate, slightly narrowed to the rounded base, the uppermost leaf often much reduced; panicles finally long-exserted, 8 to 15 cm. long, nearly as wide, many-flowered, the axis, branches, and pedicels with viscid blotches, the branches ascending or spreading, spikelet-bearing to the base; spikelets 2.4 to 2.6 mm. long, 1.4 to 1.5 mm. wide, obovate, turgid at maturity, abruptly pointed, papillose-pubescent with spreading hairs; first glume one-fifth to one-fourth the length of the spikelet, acute to truncate; second glume and sterile lemma strongly nerved, the glume obtuse, shorter than the fruit at maturity, the lemma abruptly pointed and equaling it; fruit 2 mm. long, 1.4 mm. wide, obovate-elliptic, apiculate.

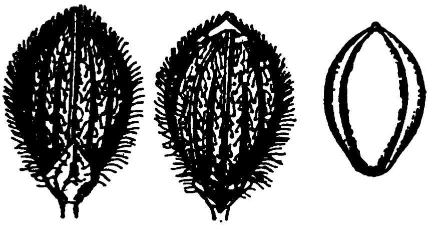


FIG. 333.—*P. scoparium*. From type specimen of *P. viscidum* Ell.

Autumnal form leaning or spreading, branching from the middle nodes after the maturity of the primary panicle, the branches usually longer than the primary internodes, repeatedly branching, often more or less scorpioid, the ultimate branchlets in flabellate fascicles, the sheaths often swollen toward the summit, contracted at the throat, the blades much reduced, overtopping the small, partially included panicles.

A well-marked and constant species, easily recognized by its velvety pubescence, the glabrous, viscid ring below the nodes, and the viscid upper portion of the sheath. The viscidity disappears in drying, but the glandular surface is evident.

DISTRIBUTION.

Wet or damp soil, Massachusetts to Florida, west to Oklahoma and Texas; also in Cuba.

MASSACHUSETTS: Cape Cod, *Cheney* in 1903 (N. E. Bot. Club Herb.).

NEW JERSEY: Avon, *Mackenzie* 1854; Tuckerton, *Chase* 3600; Wildwood, *Chase* 3486.

PENNSYLVANIA: Tinicum, *Smith* 159; without locality, *McMinn.*

DELAWARE: Millsboro, *Commons* 28; Ellendale, *Commons* 32.

MARYLAND: Eastern Shore, *Canby;* Anne Arundel County, *J. D. Smith* in 1879; Chesapeake Junction, *Hitchcock* 1637.

DISTRICT OF COLUMBIA: *Kearney* in 1897, *Merrill* 233, *Sheldon* in 1881, *Steele* in 1896 and 1897, *Topping* in 1895, *Vasey* in 1881, *Ward* in 1878 and 1879.

VIRGINIA: In the vicinity of Cape Henry, *Chase* 5438, *Coville* 17, *Hitchcock* 593, *Kearney* 308, 1477, *Mackenzie* 1688, *Noyes* 88, 89; Dismal Swamp, *McCarthy* in 1883.

NORTH CAROLINA: Wilmington, *Biltmore Herb.* 4290; Hickory, *Small & Heller* in 1891; Heiligs Mill, *Small & Heller* 204; West Raleigh, *Coit* 1304.

South Carolina: Orangeburg, *Hitchcock* 437.

Georgia: Savannah, *Kearney* 183; McGuires Mill, *Small* in 1893; Clarke County, *Harper* 110, 150; Cobb County, *Harper* 210; Americus, *Tracy* in 1897; Dekalb County, *Eggert* 82; Stone Mountain, *Hitchcock* 215; Thomson, *Bartlett* 1170.

Florida: Jacksonville, *Kearney* 156; Lake City, *Nash* 2204; Apalachicola, *Biltmore Herb.* 4290a; without locality, *Chapman.*

Kentucky: Warren County, *Price* in 1896 (Mo. Bot. Gard. Herb.).

Tennessee: Chester County, *Bain* in 1892.

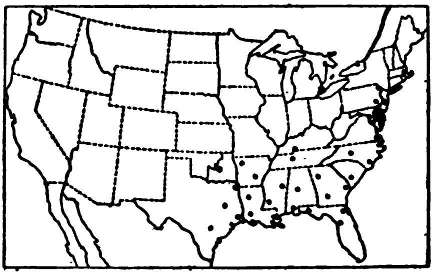


Fig. 334.—Distribution of *P. scoparium.*

Alabama: Auburn, *Pollard & Maxon* 2, 67, *Tracy* 3978; Cullman, *Eggert* 12, 60, *Mohr* in 1895; Selma, *Kearney* 3; Tuskegee, *Carver* 52, 87; Mobile, *Hitchcock* 594, *Kearney* 67, *Tracy* 7048.

Mississippi: Starkville, *Tracy* in 1896; Taylorville, *Tracy* 8591; Pachuta, *Tracy* 3306.

Arkansas: Miller County, *Eggert* 116, *Heller* 4236; northwest Arkansas, *Harvey* 30.

Louisiana: Arcadia, *Ball* 77; Ruston, *Cocks* 3324.

Texas: Waller County, *Thurow* in 1898; Texarkana, *Plank* 25; Hempstead, *Hall* 829; Fort Smith to the Rio Grande, *Bigelow;* without locality, *Nealley* in 1885, *Drummond* 381; *Vincent* 41b (Mo. Bot. Gard. Herb.).

Oklahoma: Choctaw Agency, *Bigelow.*

Cuba: Road to Pinal Mayarí, *Wright* 3467 (Gray Herb.).

179. **Panicum viscidellum** Scribn.

Panicum viscidellum Scribn. U. S. Dept. Agr. Div. Agrost. Circ. **19**: 2. 1900. "Gravelly banks near Jalapa, State of Vera Cruz, altitude 1,250 m. (4,000 feet). C. G. Pringle, No. 8089. 1899." A second specimen, *Liebmann* 323, is cited but the first is taken as the type. The Pringle specimen, which is in the National Herbarium, is in the early branching state. The culm appears to be decumbent or creeping, sending up erect branches.

DESCRIPTION.

Vernal culms ascending from a decumbent, widely spreading or creeping base, rooting at the lower nodes, softly villous or nearly glabrous, the nodes more or less short-bearded; sheaths shorter than the internodes, villous or, especially the uppermost, glabrate; ligules ciliate, 2 to 4 mm. long; blades spreading, rather thick, more or less velvety-pubescent or villous on both surfaces, the uppermost 5 to 13 cm. long, 9 to 13 mm. wide, linear-lanceolate, subcordate, the lower lanceolate, more cordate, shorter and wider; panicles 4 to 11 cm. long, half to two-thirds as wide, usually densely flowered, the numerous branches spikelet-bearing from the base; spikelets 1.8 to 1.9 mm. long, 1 mm. wide, elliptic, acute, sparsely pubescent; first glume about one-third as long as the spikelet, pointed; second glume and sterile lemma slightly exceeding the fruit at maturity; fruit 1.5 mm. long, 0.8 mm. wide, elliptic, abruptly pointed.

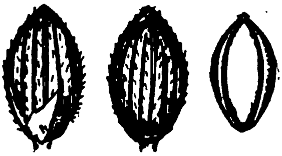


Fig. 335.—*P. viscidellum.* From type specimen.

Autumnal form branching from the middle and upper nodes, the branches erect or ascending from the decumbent primary culm, the densely villous sheaths often overlapping on the shortened internodes, the blades more or less ovate-lanceolate and strongly cordate-clasping, velvety pubescent, the panicles similar to the primary ones but smaller.

The autumnal form is not well developed in any of the specimens examined. Judging from the habit of the plant it appears to belong to the subgenus Dichanthelium but more material is necessary to determine this with certainty. The characters of the vernal form would place it in the group Lanuginosa, but the method of branching is different from that of any of the species there segregated. The specimens often resemble *P. scoparium*, and the species is therefore placed in this group, though somewhat doubtfully because of the manifest ligules and the branching habit.

DISTRIBUTION.

Gravelly banks, fields and open forests, Mexico to Colombia; also in the Isle of Pines.

Mexico: Jalapa, *Pringle* 8089, *C. L. Smith* 1617; Zacualpan, *Purpus* 2160;[a] Mirador, *Liebmann* 323; San Cristobal, *Bourgeau* 3132 (Paris Herb.); Jicaltepec, *Liebmann* 324 (Paris Herb.); Orizaba, *Botteri* 705 (Gray Herb.); *Schaffner* 284 (Paris Herb.).

Guatemala: Sierra del Mico, *Kellerman* 6231, 6249.

Nicaragua: U. S. Pacific Expl. Exped. *Wright*.

Costa Rica: Aserrí, *Tonduz* 1244; El General, *Pittier* 3358 (Instit. Costaric. Herb.).

Cuba: Isle of Pines, *Palmer & Riley* 1065.

Colombia: Near Jamundí, *Pittier* 940; Popayán, *Lehmann* 985 (Gray Herb.).

180. Panicum aculeatum Hitchc. & Chase.

Panicum aculeatum Hitchc. & Chase, Rhodora 8: 209. 1906. "Type *Chase 2520* in National Herbarium. In large clumps by small slough, border of woods, Takoma Park, D. C., July 27, 1904; collected by Agnes Chase." The type is a vernal specimen beginning to branch, with a mature primary panicle.

DESCRIPTION.

Vernal plants in large clumps; culms slender, 70 cm. to 1 meter high, ascending, scabrous, harshly pubescent below; sheaths papillose-hispid with stiff, sharp-pointed hairs, a puberulent ring at the summit, the uppermost usually glabrous; ligules minute, membranaceous, ciliate; blades firm, stiffly ascending or spreading, 12 to 20 cm. long, 9 to 13 mm. wide, acuminate, involute-pointed, scarcely narrowed to the rounded base, very scabrous on the upper surface and toward the apex beneath; panicles 8 to 12 cm. long, about as wide, few-flowered, the slender, flexuous, fascicled branches ascending or spreading, naked at the base, scabrous, sometimes with a few viscid spots; spikelets 3 mm. long, elliptic, minutely pubescent; first glume one-fourth to one-third as long as the spikelet, acute; second glume and sterile lemma abruptly acute, slightly exceeding the fruit; fruit elliptic, 2.7 mm. long, 1.3 mm. wide, minutely umbonate.

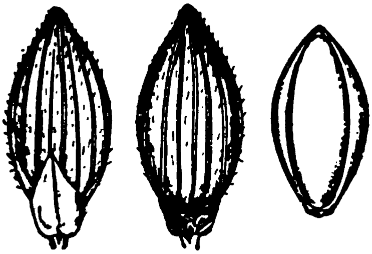


Fig. 336.—*P. aculeatum*. From type specimen.

---

[a] *Panicum laxum* Swartz was also distributed under this number.

Autumnal form branching from the middle nodes, the branches more or less divaricate, not much crowded, the blades not greatly reduced, the ultimate panicles wholly or partially included in the sheaths.

This species is allied to *P. scabriusculum*, but the panicles are smaller, more open, fewer-flowered, the axis and branches scarcely viscid, the spikelets larger and the glumes only slightly exceeding the fruit. Vernal plants bear a superficial resemblance to *P. clandestinum*.

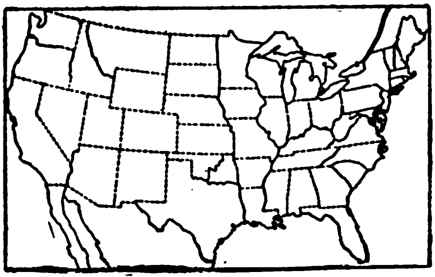


FIG. 337.—Distribution of *P. aculeatum*.

DISTRIBUTION.

Swampy woods, Long Island, New York, District of Columbia, and North Carolina; rare.

NEW YORK: Rockville Center, *Bicknell* in 1903; Hempstead, *Bicknell* in 1906.

DISTRICT OF COLUMBIA: *Chase* 2520, 5439, *House* 1041 (Hitchcock Herb.).

NORTH CAROLINA: Lake Mattamuskeet, *Chase* 3210.

181. Panicum scabriusculum Ell.

Panicum scabriusculum Ell. Bot. S. C. & Ga. 1: 121. 1816. "Sent to me from Savannah by Dr. Baldwin." The type, in the Elliott Herbarium, consists of the upper part of a culm with one leaf and a large over-mature panicle. The accompanying label reads: "Panicum scabriusculum. Hab: Georg: Dr. Baldwin."

Panicum lanuginosum Bosc; Spreng. Syst. Veg. 1: 319. 1825, not Ell. 1816. "*Georgia.*" The type is in the Willdenow Herbarium.

Panicum eriophorum Schult.;[a] Kunth, Enum. Pl. 1: 128. 1833. Based on *P. lanuginosum* Bosc, the description of which is copied.

Panicum nealleyi Vasey, Bull. Torrey Club 13: 25. 1886. "Collected in Texas by Mr. G. C. Nealley." The type, in the National Herbarium, is a vernal specimen. It was collected in Texas, May, 1885, the exact locality not being given.

Panicum dichotomum elatum Vasey, U. S. Dept. Agr. Div. Bot. Bull. 8: 31. 1889. No locality nor specimen is mentioned by Vasey. The only specimen in the National Herbarium bearing this name in Vasey's writing is one of *P. scabriusculum* in the early branching state. This specimen agrees with Vasey's description and is taken as the type. It was collected by Charles Mohr in Mobile County, Alabama, June 18, 1888.

DESCRIPTION.

Vernal form grayish olive green; culms erect, 1 to 1.5 meters high, scabrous at least below the nodes, sometimes puberulent, the nodes glabrous or puberulent; sheaths shorter than the internodes, glabrous to more or less hispid at least toward the summit, often mottled or white-spotted, commonly swollen at the base and contracted toward the summit; ligules short-membranaceous, usually with a ring of hairs above; blades stiffly ascending or spreading, often reflexed, 15 to 25 cm. long, 9 to 12 or rarely 15 mm. wide, glabrous or scabrous, often more or less pubescent beneath, gradually tapering to an involute point, slightly narrowed toward the base; panicles finally exserted, 10 to 20 cm. long, half to two-thirds as wide, rarely wider, many-flowered, the axis glabrous or pubescent, often viscid, the flexuous branches ascending, spikelet-bearing from near the base; spikelets 2.3 to 2.6 mm. long, 1.1 to 1.3 mm. wide, ovate, pointed, glabrous or obscurely puberulent; first glume less than one-sixth as long as the spikelet; second glume and sterile lemma strongly nerved, exceeding the fruit and forming an abrupt point beyond it; fruit 1.8 mm. long, 1 mm. wide, elliptic.

---

[a] Kunth cites "*Schult. Mant.* 3. 591" as place of publication, but neither the second nor third volume of Schultes's Mantissa contains a page 591, nor is this name in either volume.

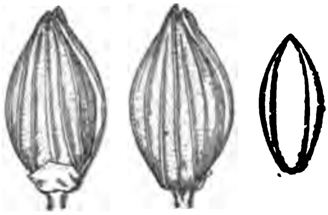


FIG. 338.—*P. scabriusculum.* From type specimen.

Autumnal form erect, branching from the middle and upper nodes, the branches appressed, somewhat longer than the internodes, finally bearing fascicled branchlets and forming dense oblong masses along the upper part of the primary culm, the sheaths, especially the later ones, densely papillose-hirsute, the flat, reduced blades ovate-lanceolate, reduced in length much more than in width, the panicles partly or entirely inclosed in the sheaths.

This species is very variable in the amount of pubescence; even on the same plant are often found glabrous and hispid sheaths or glabrous and pubescent blades. Otherwise it is an unusually uniform species.

DISTRIBUTION.

Moist ground, especially along ditches, streams, and swamps, near the coast, southeast Virginia to Florida and eastern Texas.

NEW JERSEY: Atlantic City, *Long* in 1909 (Phila. Acad. Herb.).

VIRGINIA: Norfolk County, *Kearney* 1798; Dismal Swamp, *Tyler* in 1905.

NORTH CAROLINA: Roanoke Island, *Chase* 3235; Wilsons Mills, *Chase* 3101; Wilmington, *Chase* 4600, *Hitchcock* 595, *Kearney* 270.

SOUTH CAROLINA: Orangeburg, *Hitchcock* 438, 1378; Aiken, *Ravenel*.

GEORGIA: Bullock County, *Harper* 881; Leslie, *Harper* 410.

FLORIDA: Jacksonville, *Curtiss* Q, 4878; Duval County, *Curtiss* 3610; Baldwin, *Combs* 67; Washington, *Combs* 616; without locality, *Chapman*.

ALABAMA: Flomaton, *Hitchcock* 1052, *Tracy* 3643; Mobile, *Kearney* 27, 39; Mobile County, *Mohr* in 1888.

MISSISSIPPI: Beauvoir, *Tracy* 4617; Biloxi, *Tracy* 4569.

LOUISIANA: New Orleans, *Drummond* (Gray Herb.).

TEXAS: Nona, *Nealley* 38 in 1892; without locality, *Nealley* in 1885, *Wright* (Gray Herb.).

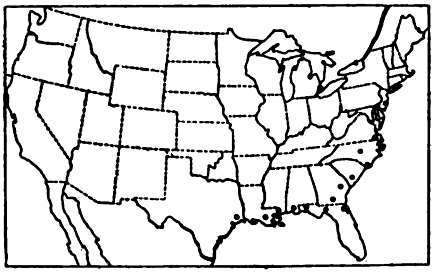


FIG. 339.—Distribution of *P. scabriusculum.*

182. Panicum cryptanthum Ashe.

Panicum cryptanthum Ashe, N. C. Agr. Exp. Sta. Bull. 175: 115. 1900. "Collected by the writer in swamps at Wilson's Mill, N. C., in July 1897." The type, in Ashe's herbarium, is a specimen arbitrarily chosen from among four bearing the label, "Wilson's Mill, N. C. July 15, 1897. W. W. Ashe collector," and with the additional data, "In a small swamp on north side of railroad about one mile west of the station." The name does not appear upon any of the sheets, but these plants agree with the description and are from the locality as published. These specimens all are the autumnal form, with the reduced panicles partially inclosed in the sheaths.

An earlier *Panicum cryptanthum* "Nuttall. Gen." is a nomen nudum. It is mentioned without description under *Panicum cynodon* Reichardt by Hillebrand[a] as a name in Kew Herbarium.

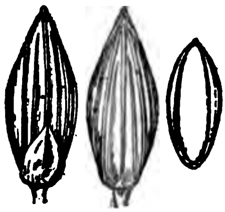


FIG. 340.—*P. cryptanthum*. From type specimen.

DESCRIPTION.

Vernal form cespitose; culms erect, 80 to 100 cm. high, glabrous except the usually bearded nodes; sheaths glabrous or the lowermost sparsely hirsute, the upper somewhat inflated, all more or less ciliate on the margins and pilose at the summit; ligules membranaceous, erose, scarcely 0.5 mm. long; blades stiff, ascending or spreading, acuminate, involute-pointed, glabrous, sparingly ciliate at base, 10 to 15 cm. long, 7 to 9 mm. wide; panicles short-exserted, 6 to 10 cm. long, nearly as wide, the axis and ascending branches viscid-spotted; spikelets 2.2 to 2.4 mm. long, 1 mm. wide, lanceolate-elliptic, pointed; first glume one-fourth to one-third as long as the spikelet; second glume and sterile lemma equal, longer than the fruit and pointed beyond it, glabrous or sparsely pilose; fruit 1.5 mm. long, 0.9 mm. wide, elliptic.

Autumnal form erect, glabrate on the nodes, sparingly branching from the middle and upper nodes, the branches stiffly ascending at an angle of 30 to 45 degrees; blades flat, stiffly ascending, 2 to 5 cm. long, 3 to 5 mm. wide, involute-pointed; panicles reduced to a narrow cluster partially hidden in the sheaths.

The habit of this species suggests a small *P. scabriusculum.*

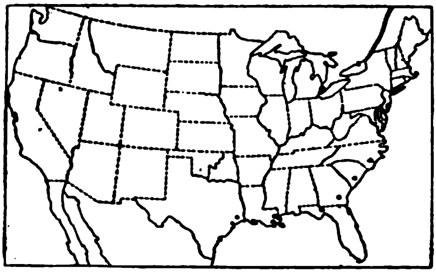


FIG. 341.—Distribution of *P. cryptanthum.*

DISTRIBUTION.

Low swampy ground, North Carolina to northern Florida, also in Texas; rare.

NEW JERSEY: Atlantic City, *Long* in 1909 (Phila. Acad. Herb.).
NORTH CAROLINA: Wilsons Mills, *Ashe* in 1897; Wilmington, *Hitchcock* 371, 1469.
SOUTH CAROLINA: Orangeburg, *Hitchcock* 1377.
GEORGIA: Belair, *Eggert* in 1899 (Mo. Bot. Gard. Herb.).
FLORIDA: De Funiak Springs, *Combs* 444.
TEXAS: Kountze, *Nealley* 37 in 1892.

Commutata.—Culms rather stout; glabrous or puberulent; ligules obsolete or nearly so; blades usually 1 cm. or more wide (often narrower in *P. ashei* and *P. equilaterale*), cordate and more or less ciliate at base; spikelets 2.4 to 3.2 mm. long, elliptic, not very turgid, pubescent, 7 to 9-nerved. Autumnal form usually not very freely branching.

Plants glaucous, glabrous; basal blades conspicuously ciliate;
    vernal culms usually solitary........................185. *P. mutabile.*
Plants not glaucous.
  Blades nearly linear, that is with parallel margins; first
      glume about half as long as the spikelet.
    Primary panicles long-exserted; sheaths mottled
        with white...............................188. *P. albomaculatum.*

---

[a] Fl. Hawaiian Isl. 498. 1888.

Primary panicles short-exserted; sheaths not mottled..187. *P. equilaterale.*
Blades lanceolate.
Culms crisp-puberulent; blades usually rigid, symmetrical, rarely over 10 mm. wide; spikelets about 2.5 mm. long.........................183. *P. ashei.*
Culms glabrous or softly puberulent; blades firm or lax; spikelets 2.7 to 3.2 mm. long.
Culms erect, or autumnal form leaning; blades symmetrical, broadly cordate.............184. *P. commutatum.*
Culms decumbent; blades usually unsymmetrical and falcate, narrowed to the scarcely cordate base...............................186. *P. joorii.*

183. Panicum ashei Pearson.

Panicum umbrosum LeConte in Torr. Cat. Pl. N. Y. 91. 1819, not Retz. 1786. On page 19 of this work the locality is given as, "In woods, Bloomingdale, N. Y." The type, in the Torrey Herbarium, consists of two vernal culms. On the same sheet is mounted a piece of a culm of *P. dichotomum.* On the label is written "Panicum umbrosum mihi" in LeConte's hand, to which is added in Torrey's hand, "(Le Conte)." The description as given by LeConte does not apply to this specimen in all respects. The culm and flowers are said to be glabrous, which is true of the specimen of *P. dichotomum*, but the other characters apply better to the two culms of *P. ashei.*

Panicum ashei Pearson; Ashe, Journ. Elisha Mitchell Soc. 15: 35. 1898. "*P. commutatum* Schultes var. *minor* Vasey, Contrib. from U. S. Nat. Herb., vol. 3, No. I: 32 (1892). Not *P. capillare* var. *minus* Muhl. (1817)." It would appear from this citation that *P. ashei* was intended as a change of name, but "sp. nov." follows the author's name, preceding the above citation, and a description is given. Hence the synonym [a] may be regarded as an error and the first specimen cited, "New York: Ashe; Ithaca, July 1898," may be taken as the type. This specimen could not be found in Ashe's herbarium, but there is a duplicate in the National Herbarium sent by Ashe, and labeled in his writing "Panicum Ashei, G. Pearson, Dry woods, Ithaca, N. Y. W. W. Ashe, July 1898." This consists of two vernal plants beginning to branch, with mature primary panicles; the culms and blades are less rigid than usual for this species. In the description the culms and sheaths are said to be glabrous, but in this specimen the culms and sheaths are crisp-puberulent.

DESCRIPTION.

Vernal plants usually conspicuously purplish, in loose clumps of few to several culms from a knotted crown; culms 25 to 50 cm. high, erect, stiff and wiry, densely crisp-puberulent, including the nodes; sheaths shorter than the internodes, less densely puberulent, short-ciliate; ligules obsolete; blades usually thick and firm, spreading or ascending, 4 to 8 cm. long, 5 to 10 mm. wide (the lower gradually smaller), acuminate, ciliate at the subcordate base and sometimes along the very scabrous margin, glabrous on both surfaces; panicles finally long-exserted, 5 to 8 cm. long, hardly as wide, loosely flowered, the branches usually in distant fascicles, ascending or spreading; spikelets 2.4 to 2.7 mm. long, 1.2 to 1.3 mm. wide, oblong-elliptic, obtuse or obscurely pointed, short-pubescent; first glume about one-third the length of the spikelet, subacute; second glume and sterile lemma subequal, slightly exposing the fruit at maturity, obtuse or withering to a point; fruit 2.1 mm. long, 1.1 mm. wide, elliptic, minutely umbonate.

---

[a] See synonymy under *P. commutatum*, page 304.

Autumnal form erect or topheavy-reclining, the culms bearing divergent branches from the middle and upper nodes or from the upper only, the terminal joint of the primary culm commonly falling, the sheaths crowded or overlapping, the blades rigid and widely spreading, little reduced except those of late autumn; winter rosette appearing early, the blades thick and firm, usually prominently ciliate nearly to the apex.

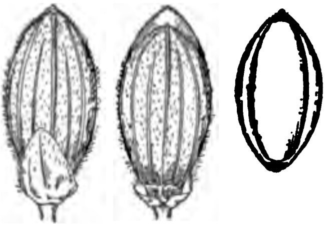


FIG. 342.—*P. ashei.* From duplicate type specimen in National Herbarium.

This unusually uniform species is distinguished from *P. commutatum* by the rigid habit, thicker, narrower blades, crisp-puberulent culms and sheaths, and by the more freely branching, often topheavy autumnal form. Occasional specimens, such as *Bissell* 5580 and *Andrews* 63 have spikelets only 2.1 to 2.3 mm. long.

There is a form represented by several specimens which appears to be intermediate between *P. ashei* and *P. barbulatum.* The plants grow in large clumps of numerous stiff culms, with narrow blades ciliate at the base, and with spikelets about 2 mm. long. These specimens are as follows. New York: Lawrence, *Bicknell* in 1892; New Jersey: Tuckerton, *Chase* 3601½; District of Columbia: *Hitchcock* 503; South Carolina: Orangeburg, *Hitchcock* 1406, 1407.

DISTRIBUTION.

Dry, especially rocky woods, Massachusetts to northern Florida, west to Michigan, Missouri, and Mississippi.

Massachusetts: Malden, *Fernald* in 1891 in part; West Quincy, *Churchill* in 1894 (both in Hitchcock Herb.).

Connecticut: Montville, *Graves* 88; New London, *Andrews* 63; North Stonington, *Bissell* 5580.

Rhode Island: Providence, *Olney.*

New York: Ithaca, *Ashe* in 1898; Northville, *Bicknell* in 1903 and 1904, *Young* 4; Rockdale Center, *Bicknell* in 1906; Rosedale, *Bicknell* in 1904.

New Jersey: South Amboy, *Mackenzie* 2163; Sussex County, *Mackenzie* 2195; Wildwood, *Chase* 3502; Wildwood Junction, *Chase* 3521; Atsion, *Chase* 3542; Egg Harbor, *Martindale* in 1876; Oradell, *Mackenzie* 2480.

Pennsylvania: Easton, *Porter* in 1895, 1897, and 1898; Chambersburg, *Porter* in 1898; Lancaster County, *Heller* 4770 in part, 4780.

Ohio: Niles, *Ingraham* in 1892; Painesville, *Hacker* 6878; Sugar Grove, *Kellerman* 6892.

Indiana: Clarke County, *Deam* 6467, 6905.

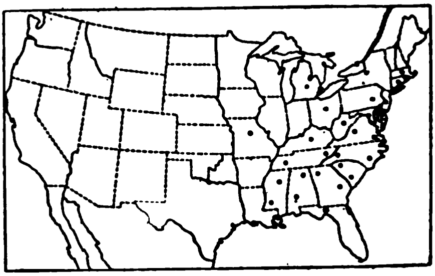


FIG. 343.—Distribution of *P. ashei.*

Michigan: Muskegan, *Wheeler* 19.

Missouri: Swan, *Bush* 17, 2911, 3456, 4487; Pleasant Grove, *Bush* 289, 312; Monteer, *Bush* 4714; Chadwick, *Bush* 4412.

Delaware: Wilmington, *Commons* 61; Milton, *Commons* 349, 356, 357; Greenbank, *Commons* 37; Ellendale, *Commons* 308; Frankford, *Commons* 53.

Maryland: Patuxent, *House* 961, *Hitchcock* 1640; Beltsville, *Chase* 3787; Hyattsville, *Steele* in 1903; Woodside, *Chase* 2830; West Chevy Chase, *Chase* 2477; Plummers Island, *Hitchcock* 564; Chesapeake Junction, *Hitchcock* 2410.

DISTRICT OF COLUMBIA: *Chase* in Kneucker Gram. Exs. 556, *Hitchcock* 422, 425, 568, *Kearney* in 1897, *Ward* 2, 7, 9, *Williams* 3, 4, 10.

VIRGINIA: Great Falls, *Chase* 3704, Four-Mile Run, *Pollard* 180; Norfolk, *Kearney* 299, 1029; Portsmouth, *Noyes* 103; Virginia Beach, *Pollard & Maxon* in 1900; Munden, *Mackenzie* 1708; Dismal Swamp, *Chase* 3679, *Tyler* in 1905; Clifton Forge, *Tidestrom* 4.

WEST VIRGINIA: Summers County, *Morris* 977; Tibbs Run, *Sheldon* 566; Fayette County, *Kellerman* 6901.

NORTH CAROLINA: Roanoke Island, *Chase* 3220; Wilmington, *Hitchcock* 424, 1461; Chapel Hill, *Ashe*, *Chase* 3051, 3064; Magnetic City, *Wetherby* 58; Lenoir, *Hitchcock* 565.

SOUTH CAROLINA: Orangeburg, *Hitchcock* 1388; Pelzer, *House* 2430; Clemson College, *House* 2105; Aiken, *Hitchcock* 566.

GEORGIA: Augusta, *Cuthbert* 427, 1163, *Kearney* 207; Stone Mountain, *Eggert* 44, *Hitchcock* 423, 567, 1353; Thomson, *Bartlett* 1458, 1504.

FLORIDA: Chattahoochee, *Tracy* 3629 (Field Mus. Herb.).

KENTUCKY: Harlan County, *Kearney* 34 in part, 54 in part.

TENNESSEE: Polk County, *Chambliss* 14, 88, *Kearney* 324; Knoxville, *Smith* in 1895, *Scribner* in 1891; Nashville, *Gattinger* in 1882.

ALABAMA: Pisgah, *Chase* 4473; Scottsboro, *Chase* 4498; Auburn, *Hitchcock* 1323, 1327, *Tracy* 3747, 3756; Tuskegee, *Ball* in 1901.

MISSISSIPPI: Enterprise, *Tracy* 3275; Meridian, *Tracy* 3268.

184. **Panicum commutatum** Schult.

Panicum nitidum majus Pursh, Fl. Amer. Sept. 1: 67. 1814. No specimen nor locality is cited. Among the Pursh plants in Kew Herbarium is a sheet upon which are mounted a specimen of *P. commutatum* and one of *P. yadkinense*. Above the first is a label reading "*Panicum nitidum* Mx.," and above the latter one reading "*Panicum nitidum major.*" Since Pursh's description of the variety is "omnibus partibus multo majus," it would appear that the labels have been transposed, and that the specimen of *P. commutatum* should be taken as the type of variety *majus*.

Panicum nervosum Muhl.; Ell. Bot. S. C. & Ga. 1: 122. 1816, not Lam. 1797. Elliott states that the species "grows in dry shaded soils," but no definite locality is given. The type specimen, in the Elliott Herbarium, consists of portions of two culms, the panicle of one destitute of spikelets. The culms are glabrous, the sheaths glabrous or minutely puberulent between the nerves, densely puberulent on the back at the summit, blades papillose-ciliate at base, otherwise glabrous. The accompanying label reads: "Panicum nervosum Muhl. Hab. Car. et Geor:" This species was also described as *P. nervosum* by Muhlenberg,[a] but there is no specimen to represent this in the Muhlenberg Herbarium. In this description the ligule is said to be "barbaeform," and the species "P. aquatico[b] affine." This throws some doubt on the identity of Muhlenberg's specimen with the type of *P. nervosum* Muhl.; Ell. in Elliott's Herbarium. But the statement that the leaves are lanceolate and ciliate at base, and that the panicle branches are numerous and spreading shows that the species has no close affinity to his *P. aquaticum*, as suggested by Muhlenberg. Since no specimen can be found by which to interpret Muhlenberg's description, it is here assumed that his type is the same as Elliott's and that the statement concerning the ligule is an error.

Panicum commutatum Schult. Mant. 2: 242. 1824. Based on "*P. nervosum Mühlenb. Descr. ub. p. 117*" [error for 116], the name presumably changed because of

---

[a] Descr. Gram. 116. 1817.

[b] This is *Sacciolepis striata* (L.) Nash.

P. nervosum Lam. 1797. Muhlenberg's description, including "ligula barbiformis," is copied. It is evident that Schultes had not seen a specimen of this.[a]

Panicum enslini Trin. Gram. Pan. 230. 1826. "Am.[erica] bor.[ealis] (TRATTINICK, e collect. Enslini)." The type, in the Trinius Herbarium, is the vernal form. The accompanying label in Trinius's hand reads "Panicum Enslini m. (An *Pan. tenue* Muhl. quaerit Nees ab Es.) ab Enslino in Am. bor. 1. dt. sine nom. cl. Trattinick Wiennae 1820." There is a duplicate specimen in the Vienna Herbarium. Judging from a small portion of the type sent to the National Herbarium from the Trinius Herbarium[b] this was thought to be the same as *P. equilaterale*, but from subsequent study of the somewhat fragmentary entire specimen and of the duplicate it appears to be a narrow-leaved form of *P. commutatum.*

Panicum polyneuron Steud. Syn. Pl. Glum. **1**: 91. 1854. Based on "P. nervosum *Mühlbrg*. Gram. p. 116, *Torr*. Fl. N. Am. I. 143." The description, however, is a translation of that given in Torrey's Flora[c] for *P. nervosum* and applies to the species described as *P. macrocarpon* LeConte,[d] which proves to be the true *P. latifolium* L. On the type sheet of *P. macrocarpon* LeConte, in Columbia University Herbarium, is written in Torrey's hand "(P. nervosum Muhl. T.)." [T. probably stands for Torrey, that is, *P. nervosum* Muhl. according to Torrey.]

Panicum commutatum minor[*us*] Vasey, U. S. Dept. Agr. Div. Bot. Bull. **8**: 34. 1889. "Southern States." The only specimen marked with this name in Vasey's writing is found in Nash's herbarium, having been obtained through exchange of duplicates with Dr. Vasey. This is a small, immature, vernal specimen with glabrous culms, collected by Ravenel at Aiken, S. C., in 1867, and is labeled in Vasey's hand "P. commutatum var. minor Vasey."

Panicum commutatum latifolium Scribn. in Kearney, Bull. Torrey Club **20**: 476. 1893. This is described in a single line in a footnote to notes on plants collected on Pine Mountain, southeastern Kentucky, in August, 1893, as follows: "Leaves very broad, panicle large, the widely spreading branches few-flowered." On page 479 this name is listed as *Kearney* no. 299. In the Scribner Herbarium is a specimen of *P. commutatum* with unusually wide blades and large panicles, which is probably the plant referred to, although there are no data with the specimen.[e] The sheet is marked *P. latifolium* Ell., through which is drawn a line and below in Scribner's hand is written "*Panicum commutatum* Schultes."

Panicum commelinaefolium Ashe, Journ. Elisha Mitchell Soc. **15**: 29. 1898, not Rudge, 1805. "Based on material collected by Dr. J. K. Small near Stone Mt., Ga., Aug. 1–6, 1895." The type, in the Biltmore Herbarium, consists of several late vernal culms beginning to branch, with short internodes and short-exserted panicles. The culms, sheaths, and both surfaces of the blades are puberulent, the blades 1.7 to 2.5 cm. wide, the spikelets 2.8 mm. long.

Panicum currani Ashe, Journ. Elisha Mitchell Soc. **15**: 113. 1899. Based on *P. commelinaefolium* Ashe, not Kunth.

Panicum subsimplex Ashe, N. C. Agr. Exp. Sta. Bull. **175**: 115. 1900. "Collected by Mr. A. Commons in dry rocky woods near Wilmington, Del., in August." The type, in Ashe's herbarium, consists of autumnal culms, with broadly elliptic, somewhat falcate blades 1.5 to 2.5 cm. wide, and small, few-flowered panicles, overtopped by the upper blades.

---

[a] Schultes seems not to have had Elliott's Botany of South Carolina and Georgia, since where he refers to this work (Mant. **2**: 256–257) he does so on the authority of Nuttall's Genera Plantarum.

[b] See Hitchcock, Bot. Gaz. **41**: 65. 1906.

[c] Fl. North. & Mid. U. S. 143. 1823.

[d] LeConte in Torr. Cat. Pl. N. Y. 91. 1819.

[e] Other Kearney specimens in the Scribner Herbarium are often marked with collector's name and number only, without other data.

DESCRIPTION.

Vernal plants commonly purple-tinged; culms in clumps of few to many, 40 to 75 cm. high, rather stout, erect, glabrous or sometimes softly (not crisp) puberulent; nodes puberulent; sheaths shorter than the long internodes, ciliate on the margin and with a densely puberulent ring at the summit, otherwise glabrous or puberulent between the nerves; ligules nearly obsolete; blades usually firm, spreading or ascending, 5 to 12 cm. long, 12 to 25 mm. wide, the lower and upper smaller than those of the midculm, rather abruptly tapering to an acuminate apex and slightly narrowed to the cordate-clasping base, glabrous on both surfaces or puberulent beneath or sometimes also above, the margin ciliate at the base; panicles usually long-exserted, 6 to 12 cm. long, as wide or wider, loosely flowered, the axis glabrous or nearly so, the flexuous branches spreading; spikelets 2.6 to 2.8 mm. long, 1.3 mm. wide, oblong-elliptic, obtuse, softly pubescent; first glume about one-fourth the length of the spikelet, triangular, acute or obtuse; second glume and sterile lemma barely covering the fruit at maturity; fruit 2.2 to 2.3 mm. long, 1.2 mm. wide, elliptic, minutely umbonate.

Autumnal form erect or leaning, branching from the middle nodes, the portion of the primary culm above the uppermost branch commonly falling away, leaving the branch, with its shortened internodes, crowded, rather loose sheaths, scarcely or not at all reduced blades, and hardly exserted panicle, as the apparent termination of the primary culm; secondary branchlets crowded toward the summit, the reduced blades exceeding the partly included, much reduced panicles; winter rosette appearing rather early, the blades firm, ovate.

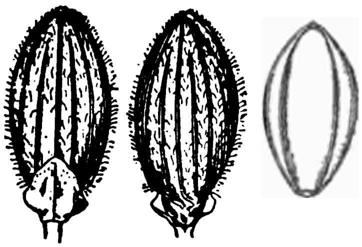


FIG. 344.—*P. commutatum.* From type specimen of *P. nervosum* Muhl. in Elliott Herbarium.

This species is typically almost glabrous, with stiff culms and firm blades, but puberulence occurs rather commonly and is not found to be associated with any other character. The type of *P. currani* is puberulent throughout and has somewhat broader blades than common in *P. commutatum*, but these characters are too variable to allow of separating this form as a species. In some specimens the culms only are puberulent, in others the sheaths or the lower surface of the blades only. The puberulence can not be coördinated with the wide blades. Some puberulent specimens have ordinarily wide blades and other specimens with wide blades are glabrous.

Early autumnal specimens in which the upper branch has replaced the terminal portion of the main culm sometimes appear very different from vernal specimens, owing to a somewhat unsymmetrical broadening of the middle of the crowded upper blades. The type of *P. subsimplex* is such a specimen. A plant collected by Scribner at White Cliff Springs, Tenn. (in Hitchcock's herbarium), shows several culms of typical *P. commutatum*, the terminal portions widely divaricate, but not yet fallen, and the upright branches with the unsymmetrically broadened blades as in the type of *P. subsimplex*.

A few southwestern specimens such as *Hitchcock* 1104, 1253, *Langlois* 39, and 41 in part, *Nealley* in 1887 and *Tracy* 4577, differ in appearance from *P. commutatum*, having rather slender culms and narrower blades and seem to approach *P. joorii*, but the spikelets are not over 2.8 mm. long.

Most of the Florida specimens are taller and more robust and have blades sometimes as much as 20 cm. long and spikelets 3 to 3.2 mm. long. This form can not be satisfactorily separated even as a subspecies, though extreme specimens differ sufficiently to be recognizable. The following specimens represent this variation: *Chase* 4205, *Combs* 89, 156, 886, 926, 1038, *Curtiss* 3583* in part, *Hitchcock* 757, 1008, *Nash* 1119, *Tracy* 3629.

DISTRIBUTION.

Woods and copses, Massachusetts to Illinois, south to Florida and Texas.

MASSACHUSETTS: Wellesley, *Rich* in 1899.

PENNSYLVANIA: Lancaster County, *Heller* 4768; Ohiopyle, *Ricker* 1153.

OHIO: Vinton, *Kellerman* 6881.

INDIANA: Clarke County, *Deam* 6595.

ILLINOIS: Without locality, *Schneck* in 1879.

MICHIGAN: Agricultural College, *Wheeler* in 1890 (Mich. Agr. Col. Herb.).

MISSOURI: Butler County, *Eggert* 257 in 1893; Carter County, *Eggert* 290; Monteer, *Bush* 755, 4685; Malden, *Bush* 731; Campbell, *Bush* 748; Pleasant Grove, *Bush* 238, 287, 308, 322; Grandin, *Bush* 2736.

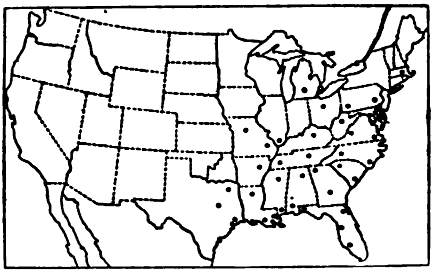


FIG. 345.—Distribution of *P. commutatum*.

DELAWARE: Frankfort, *Commons* 48; Mount Cuba, *Chase* 3621, *Commons* 309.

MARYLAND: Great Falls, *Chase* 5436, *Ward* in 1882; Riverdale, *Chase* 2381.

DISTRICT OF COLUMBIA: *Chase* in Kneucker Gram. Exs. 557, *Hitchcock* 426, 569, *Kearney* 31, *Merrill* 204, *Scribner* in 1894, *Steele* in 1899, *Vasey* in 1874, 1881, 1883, and 1884, *Ward* in 1879.

VIRGINIA: Near Norfolk, *Kearney* 1317, 1414, 1463, *Noyes* 69, 74, *Pollard & Maxon* in 1900; Dismal Swamp, *Chase* 3654, 3678; Smyth County, *Small* 2, 8, and 14, in 1892.

WEST VIRGINIA: Fayette County, *Kellerman* 6902.

NORTH CAROLINA: Jacksonville, *Chase* 3168; Wilmington, *Chase* 3114, *Hitchcock* 1458; Chapel Hill, *Ashe* in 1898, *Chase* 3052; Biltmore, *Biltmore Herb.* 802b, *Hitchcock* 570, 571; Lenoir, *Hitchcock* 428; Magnetic City, *Wetherby* 59; Columbus, *Townsend* in 1897; Rowan County, *Small & Heller* 201.

SOUTH CAROLINA: Orangeburg, *Hitchcock* 1413, 1414; Clemson College, *House* 2106, 2179, 2387.

GEORGIA: Chickamauga, *Ruth* 11; Stone Mountain, *Eggert* 43, 45, *Hitchcock* 427, 1348; Augusta, *Cuthbert* in 1900; Athens, *Harper* 60; Rabun County, *House* 2305; Cobb County, *Harper* 221; Albany, *Tracy* 3630; Warm Springs, *Tracy* 8866; Brooks County, *Harper* 1623.

FLORIDA: Duval County, *Curtiss* 3583* in part, 4027, 4636 (last two in Hitchcock Herb.), *Fredholm* 455; Lake City, *Combs* 89, 139, 156, *Hitchcock* 572, 1008; Chattahoochee, *Tracy* 3629 in part; Apalachicola, *Biltmore Herb.* 802a; Madison, *Combs* 251; Monticello, *Combs* 330; Chipley, *Combs* 589, 601; Old Town, *Combs* 886; Homosassa, *Combs* 926; Titusville, *Hitchcock* 757; Clarcona, *Meislahn* 168a, 189; Grasmere, *Baker* 42, *Combs* 1038, 1098; Eustis, *Nash* 45 in part, 78, 240 in part, 302, 1119, 1675; Gainesville, *Chase* 4205; Manatee, *Tracy* 7382; Manavista, *Tracy* 6695.

KENTUCKY: Harlan County, *Kearney* 34 in part, 172.

Tennessee: Hiwassee Gorge, *Kearney* 327; Wolf Creek, *Kearney* 972, 973, and in 1894; Knoxville, *Ruth* 61; Lavergne, *Biltmore Herb.* 2984a; Kingston Springs, *Gattinger* in 1882; Jackson, *Bain* in 1893; Greenhill, *Gattinger* in 1881.

Alabama: Scottsboro, *Chase* 4504; Auburn, *Earle & Baker* 1531, *Hitchcock* 1319, 1328, 1339; Tuskegee, *Carver* 60, 88, 93, 94; Blount County, *Eggert* 22; Etowah County, *Eggert* 7; Flomaton, *Hitchcock* 1049; Mobile, *Mohr*.

Mississippi: Starkville, *Tracy* in 1888; Enterprise, *Tracy* 3296 in part; Biloxi, *Tracy* 4577 in part, *Tracy* in Pollard Distr. 1416; Ocean Springs, *Earle* in 1895; Petit Bois Island, *Tracy* 4577 in part; Bayou Gravelin, *Tracy* 4573; Mississippi City, *Hitchcock* 1104, 1108.

Arkansas: Fulton, *Bush* 234, 1450.

Louisiana: Calhoun, *Ball* 66, *Hitchcock* 1268, 1274, 1286, 1291; Shreveport, *Hitchcock* 1253; Alexandria, *Ball* 625; Plaquemines Parish, *Langlois* 39.

Texas: Houston, *Bebb* 1242, *Hall* 831, *Nealley* 18, *Ravenel* 46; Texarkana, *Heller* 4083; Columbia, *Bush* 1224; Grand Saline, *Reverchon* 4143; Palestine, *Plank* 55.

185. Panicum mutabile Scribn. & Smith.

Panicum mutabile Scribn. & Smith; Nash in Small, Fl. Southeast. U. S. 103. 1903. On page 1327 is the following citation: "Type, Biloxi, Miss., *Tracy* no. 3074, 1896 in Herb. Nash." The type, in Nash's herbarium, is the early branching form, the blades from the basal shoots large, 10 to 15 cm. long, 13 to 24 mm. wide, prominently ciliate almost to the apex, the culm blades ciliate toward the base only.

DESCRIPTION.

Vernal plants blue green, glaucous; culms solitary or few in a tuft, erect, 30 to 70 cm. high, glabrous or rarely minutely pubescent; sheaths much shorter than the internodes, glabrous except the usually sparsely ciliate margin; ligules very short, membranaceous-fimbriate; blades horizontally spreading, 6 to 15 cm. long, 8 to 20 mm. wide, tapering to both ends, rather thin, glabrous on both surfaces, ciliate on the margin toward the cordate base or the lower ciliate nearly to the apex; panicles 7 to 15 cm. long, about as wide, very loosely few-flowered; spikelets 2.9 to 3 mm. long, 1.2 mm. wide, elliptic, minutely pointed, pubescent; first glume about one-third as long as the spikelet, subacute; second glume and sterile lemma equaling or slightly exceeding the fruit; fruit 2.6 mm. long, 1.1 mm. wide, elliptic, subacute.

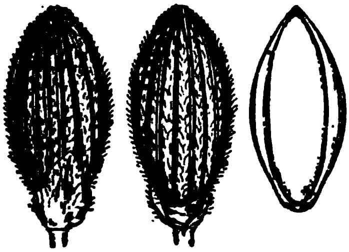


FIG. 346.—*P. mutabile*. From type specimen.

Autumnal form erect or reclining, sparingly branching from the middle and upper nodes, the branches longer than the internodes, finally producing toward the ends fascicles of shortened branchlets with somewhat reduced leaves.

This species differs from *P. commutatum* in the glaucous blue green color, the more slender culms, solitary or few in a tuft, the glabrous sheaths, the narrower blades and the conspicuously ciliate basal blades. In herbarium specimens the glaucous color may be seen best on the culm below the nodes.

DISTRIBUTION.

Sandy pine woods or hammocks, southeast Virginia to northern Florida and west to Mississippi.

VIRGINIA: Cape Henry, *Chase* 5437, *Hitchcock* 429.

NORTH CAROLINA: Wards Mill, *Chase* 3189; Wilmington, *Chase* 3154, *Hitchcock* 573, 1465.

GEORGIA: Stone Mountain, *Hitchcock* 430; Clarke County, *Harper* 147; Coffee County, *Harper* 1435; Thomson, *Bartlett* 1508.

FLORIDA: Lake City, *Chase* 4290, *Hitchcock* 1015, 1035; Madison, *Combs* 224; Monticello, *Combs* 299, 307; Bay Head, *Combs* 653; Gainesville, *Combs* 740.

ALABAMA: Gateswood, *Tracy* 8424.

MISSISSIPPI: Biloxi, *Kearney* 336,* *Tracy* 3646; Mississippi City, *Hitchcock* 1103; Bayou Gravelin, *Tracy* 4573 (Field Mus. Herb.).

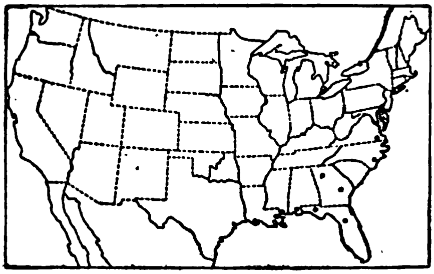


FIG. 347.—Distribution of *P. mutabile.*

186. Panicum joorii Vasey.

Panicum leiophyllum Fourn. Mex. Pl. **2**: 20. 1886, not Nees, 1829. The only specimen cited is "In valle Cordovensi, januario (BOURG[EAU] absque n.)." This name was earlier listed by Hemsley[a] without description. The type, in the Paris Herbarium, consists of several primary culms beginning to branch, the culms puberulent, the largest blades about 8 cm. long and 12 mm. wide.

Panicum joorii Vasey, U. S. Dept. Agr. Div. Bot. Bull. **8**: 31. 1889. "Louisiana (Dr. J. F. Joor)." The type, in the National Herbarium, is a clump of several autumnal culms, branching at all the nodes, the primary summits mostly fallen and replaced by branches bearing fascicled branchlets, the primary blades as much as 16 cm. long and 18 mm. wide, more or less falcate. The accompanying label reads: "Panicum Joorii, Creek bank, in dense tufts! near Baton Rouge, La. Oct. 1, '85. No. 39 Legit J. F. Joor, M. D."

Panicum manatense Nash, Bull. Torrey Club **24**: 42. 1897. "Collected by the writer on August 21, 1895, near a sulphur well in a wet hammock northeast of Palmetto, Manatee County, Florida, no. 2428a." The type, in Nash's herbarium, is a clump of early autumnal culms branching from all the nodes, the largest primary blades being scarcely 8 cm. long and 15 mm. wide, somewhat falcate.

DESCRIPTION.

Vernal form rather pale grayish green; culms in clumps of few to many, 20 to 55 cm. high, slender, spreading or ascending from a decumbent base, glabrous or rarely puberulent, at least the lower internodes purplish red; sheaths shorter than the internodes, ciliate, otherwise glabrous or rarely puberulent between the nerves; ligules nearly obsolete; blades ascending or spreading, 6 to 15 cm., rarely 18 cm. long, 7 to 18 mm. wide, thin but firm, often subfalcate, acuminate, narrowed toward the rounded base, usually ciliate at base, otherwise glabrous; panicles short-exserted, 5 to 9 cm. long, about two-thirds as wide, loosely flowered, the branches ascending or spreading; spikelets 3 to 3.1 mm. long, 1.2 to 1.3 mm. wide, elliptic, abruptly short-pointed, pubescent; first glume one-third to two-fifths as long as the spikelet, acute; second glume and sterile lemma more or less pustulate-papillose between the nerves, the glume slightly shorter than the usually involute-pointed sterile lemma; fruit 2.4 mm. long, 1.2 mm. wide, elliptic, minutely umbonate.

---

[a] Biol. Centr. Amer. Bot. **3**: 490. 1885.

Autumnal form widely spreading, bearing more or less divaricate branches from all the nodes, these primary branches longer than the internodes and branching from all or from their upper nodes, the ultimate branchlets in short, dense fascicles, the reduced blades ascending, exceeding the numerous, small, partly included panicles; winter rosette a crown of a few short, leafy, basal shoots, with evident internodes.

The type of *P. joorii* is an exceptional specimen, having unusually large blades. The only other collection seen which entirely matches the type is *Chase* 4274 (Lake City, Florida), in which the blades are even a little longer than in Joor's no. 39. Harper's no. 1106 (Georgia) and *Tracy* 120 and 3318 (Mississippi) are much like the type. The type of *P. manatense* represents the usual form in its early autumnal state. As a whole this species has glabrous culms, sheaths, and blades, but occasional specimens more or less puberulent are found, such as *Combs* 860, *Heller* 4120, and *Hitchcock* Lee Co. Pl. 477.

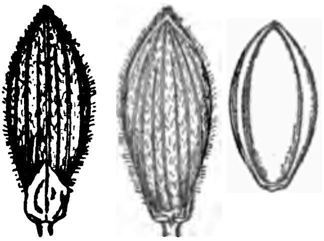


FIG. 348.—*P. joorii.* From type specimen.

Three specimens with spikelets only 2.2 to 2.5 mm. long, and with more or less pubescence on culms and sheaths are doubtfully referred here: FLORIDA: Orange Bend, *Chase* 4094. LOUISIANA: Burnside, *Combs* 1427; Plaquemines Parish, *Langlois* 39.

DISTRIBUTION.

Low or swampy woods, southeastern Virginia to Florida, west to Texas and Arkansas; also in Mexico.

VIRGINIA: Princess Anne County, *Mackenzie* 1794.

SOUTH CAROLINA: Isle of Palms, *Chase* 4550.

GEORGIA: Burke County, *Harper* 767; Leslie, *Harper* 1106; Albany, *Tracy* 3655; Thomson, *Bartlett* 1501.

FLORIDA: Lake City, *Chase* 4274, *Combs* 144, *Hitchcock* 1011; Madison, *Combs* 270; Chattahoochee, *Curtiss* in 1884; Quincy, *Combs* 412; Tallahassee, *Combs* 373; Old Town, *Combs* 860; Titusville, *Chase* 4019, *Hitchcock* 756, 760; Eustis, *Nash* 240 in part; Orange Bend, *Chase* 4099; Eldorado, *Chase* 4126; Gainesville *Chase* 4219, 4256; Dunnellon, *Combs* 921; Mary Esther, *Tracy* 9142; Bartow, *Combs* 1237; Tampa, *Combs* 1393, 1400, *Hitchcock* 947; Manatee, *Hitchcock* 976, *Rugel* 351, 378; Myers, *Chase* 4181, *Hitchcock* 909, Lee Co. Pl. 471; Alva, *Hitchcock* Lee Co. Pl. 477; Miami, *Chase* 3907, 3948, *Eaton* 169, *Hitchcock* 576, 636, 652, 660, 674.

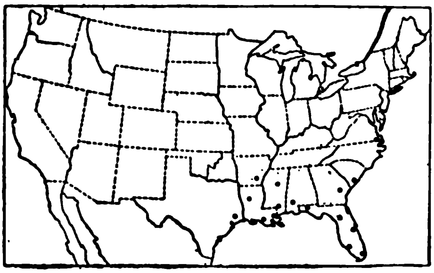


FIG. 349.—Distribution of *P. joorii.*

ALABAMA: Chehaw, *Hitchcock* 577.

MISSISSIPPI: Starkville, *Chase* 4468; *Tracy* 29 in 1889; Morrisville, *Tracy* 3387; Bludlebury, *Tracy* 3318; Lake, *Tracy* 120 in 1888; Meridian, *Tracy* 3266.

ARKANSAS: Lafayette County, *Heller* 4120.

LOUISIANA: Rayville, *Ball* 25; Lake Charles, *Chase* 4430, 4437, *Hitchcock* 1142; Plaquemines Parish, *Langlois* 41 in part.

TEXAS: Waller, *Hitchcock* 1207, 1208, *Thurow* in 1898; Houston, *Hall* 828 (Gray Herb.).

MEXICO: Córdoba, *Bourgeau* in 1866 (Paris Herb.).

187. **Panicum equilaterale** Scribn.

Panicum equilaterale Scribn. U. S. Dept. Agr. Div. Agrost. Bull. **11**: 42. *pl. 2*. 1898. Two specimens are cited as follows: "In pine lands [Eustis], Florida (No. 1120, George V. Nash, June, 1894); scrubby hammock lands [Eustis], Florida (No. 1674, George V. Nash, August, 1894)." The plate cited above is drawn from Scribner's specimen of *Nash* 1674, now in Hitchcock's herbarium, which specimen is therefore the type. It consists of two culms 53 and 65 cm. high, one simple, the other producing short fascicled branches at the upper two nodes. The blades are 10 to 17 cm. long.

Panicum epilifolium Nash, Bull. Torrey Club **26**: 571. 1899. "The type collected by the writer in a scrub hammock at Eustis, Lake Co., Florida, March 12-31, 1894, no. 45." The type, in Nash's herbarium, is the vernal form, with scarcely mature panicles. The longest blade is but 7.5 cm. long, but a duplicate specimen in the National Herbarium has blades as much as 10 cm. long. Two species were distributed under Nash's no. 45, the other being *P. commutatum*.

DESCRIPTION.

Vernal plants glossy, grayish green, in clumps of several to many culms, these 25 to 70 cm. high, stiff and erect, glabrous or nearly so, including the nodes; sheaths much shorter than the elongated internodes, or the upper two approximate, glabrous except for the densely short-ciliate margin; ligules nearly obsolete; blades firm, widely spreading or ascending, 6 to 17 cm. long, 6 to 14 mm. wide, very scabrous (the margins nearly parallel), often ciliate at the rounded or subcordate base, acuminate, glabrous on both surfaces, often drying conduplicate; panicles usually short-exserted, loosely flowered, 5 to 10 cm. long, two-thirds to three-fourths as wide, the branches ascending; spikelet 3.2 mm. long, 1.3 mm. wide, obovate-elliptic, obscurely pointed, pubescent; first glume half the length of the spikelet or more, rather remote, triangular, acute; second glume and sterile lemma subequal, barely covering the fruit at maturity; fruit 2.6 to 2.7 mm. long, 1.25 mm. wide, elliptic, minutely umbonate. Autumnal form erect or leaning, branching from the upper and middle nodes after the maturity of the primary panicle, these primary branches often longer than the internodes and producing short, fascicled, appressed branchlets with reduced spreading blades from their uppermost nodes, the numerous small panicles partly included; winter rosette appearing late, the blades lanceolate, firm, sometimes ciliate.

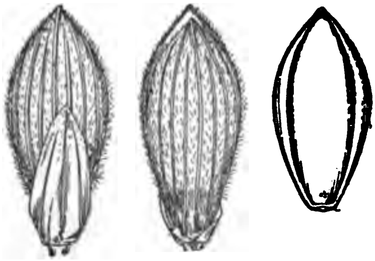


FIG. 350.—*P. equilaterale*. From type specimen.

This species is distinguished from *P. commutatum* by its almost linear blades, which vary much in size but are characteristically parallel-margined, and by its branching from the uppermost nodes of both the primary culm and the branches; and from *P. manatense*, which branches in the same way, by the erect habit and rather distant first glume half as long as the spikelet.

DISTRIBUTION.

In pine lands, hammocks, and sandy woods, South Carolina to southern Florida.

SOUTH CAROLINA: Isle of Palms, *Ball* 791, *Chase* 4537, 4549, *Hitchcock* 421.

FLORIDA: Duval County, *Curtiss* 3600 A in part (Gray Herb.); St. Augustine, *Ricker* 943; Cedar Key, *Combs* 793; Apalachicola, *Chapman;* Pensacola, *Tracy* 8428; Grasmere, *Combs* 1053; Gainesville, *Chase* 4241, 4258, *Combs* 737; Homossassa, *Combs* 926½; Crystal, *Combs* 1023; Clarcona, *Pieters* 116; Orange County, *Baker* 69; Eustis, *Chase* 4063, 4122, *Nash* 45 in part, 1120, 1674; Clearwater, *Tracy* 7167; Palma Sola, *Tracy* 6713 in part; Sneeds Island, *Tracy* 6460, 7050, 7051 in part: Miami, *Chase* 3908, *Hitchcock* 574, 633, 653, 655; Ormond, *Hitchcock* 575.

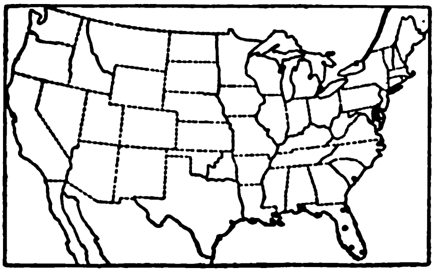


FIG. 351.—Distribution of *P. equilaterale.*

188. Panicum albomaculatum Scribn.

Panicum albomaculatum Scribn. U. S. Dept. Agr. Div. Agrost. Circ. **19**: 2. 1900. "Dry rocky hills, Patzcuaro, State of Michoacan [Mexico], October 10. C. G. Pringle, No. 5203, 1892." The type, in Hitchcock's herbarium, consists of a tuft of primary culms with mature panicles, the culms beginning to branch from the lower nodes.

DESCRIPTION.

Vernal culms tufted, 50 to 100 cm. high, arising from a knotty crown, erect, slender but stiff, minutely puberulent between the striæ, at least below the glabrous nodes; sheaths long, the lower overlapping, minutely puberulent, more or less mottled with white spots, densely short-ciliate on the margin; ligules about 0.2 mm. long; blades firm, spreading or ascending, reflexed when old, 8 to 17 cm. long, 9 to 15 mm. wide, linear-lanceolate, acuminate, rounded and ciliate at the base, roughish on the upper surface and with a narrow line of appressed pubescence along the very scabrous margins, glabrous or obscurely pubescent beneath; panicles long-exserted, ovate in outline, 10 to 16 cm. long, two-thirds to three-fourths as wide, loosely flowered, the axis and ascending branches glabrous; spikelets 2.8 mm. long, 1.2 mm. wide, obovate elliptic, obtuse, sparsely pubescent; first glume nearly or quite half the length of the spikelet, obtuse, or subacute; second glume and sterile lemma equaling the fruit at maturity; fruit 2.2 mm. long, 1.2 mm. wide, elliptic, subacute.

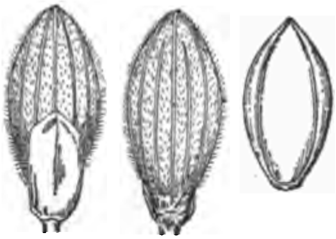


FIG. 352.—*P. albomaculatum.* From type specimen.

Autumnal form not known.

Probably most nearly related to *P. equilaterale* Scribn.

DISTRIBUTION.

Known only from type locality.

MEXICO: Patzcuaro, State of Michoacan, *Pringle* 5203.

Latifolia.—Culms rather stout, usually more than 50 cm. high; ligules not over 1 mm. long; blades ample, usually more than 1.5 cm. wide, cordate; spikelets 2.7 to 4.5 mm. long, rather turgid, pubescent, 7 to 9-nerved. Autumnal form not very freely branching.

Sheaths strongly papillose-hispid, at least the lower and those of the branches..189. *P. clandestinum.*
Sheaths glabrous or softly villous.
  Nodes glabrous; spikelets 3.4 to 3.7 mm. long.............190. *P. latifolium.*
  Nodes bearded; spikelets 4 to 4.5 mm. long.
    Blades glabrous or nearly so on both surfaces...........191. *P. boscii.*
    Blades velvety beneath..............................191a. *P. boscii molle.*

189. Panicum clandestinum L.

Panicum clandestinum L. Sp. Pl. 58. 1753. "*Habitat in* Jamaica, Pensylvania. *Kalm.*" In the Linnæan Herbarium is a specimen marked "clandestinum K" [Kalm] in Linnæus's writing, which is taken as the type since it is the only specimen so marked by Linnæus, and since it agrees with his description. The Jamaica locality is evidently based upon the Sloane phrase name and figure cited as synonym. This figure represents *Hackelochloa granularis* (L.) Kuntze, a species to which Linnæus's description does not at all apply, for which reason the Jamaica locality is rejected. The Kalm specimen is the autumnal form, the secondary panicles inclosed in the sheaths, which are crowded at the summit.

Milium clandestinum Moench, Meth. Pl. 204. 1794. Based on *Panicum clandestinum* L.

Panicum latifolium clandestinum Pursh, Fl. Amer. Sept. 1: 68. 1814. Based on *P. clandestinum* "Willd. sp. pl. 1. p. 351." In Willdenow's Species Plantarum the original Linnæan diagnosis, citations, and description are given, with reference to "Sp. Pl. 86."[a]

Panicum pedunculatum Torr. Fl. North. & Mid. U. S. 141. 1823. "On the Island of New-York." The type, in Columbia University Herbarium, is a vernal specimen 80 cm. high, beginning to branch, with an over-mature, long-exserted, primary panicle, the spikelets 2.8 mm. long. The accompanying label, in Torrey's hand, reads "Panicum pedunculatum*" [followed by a brief diagnosis] "In wet meadows, among thickets. Aug."

Panicum clandestinum pedunculatum Torr. Fl. N. Y. 2: 426. 1843. Based on *P. pedunculatum* Torr.

Panicum decoloratum Nash, Bull. Torrey Club 26: 570. 1899. "Collected by Mr. E. P. Bicknell on a sandy railroad bank at Tullytown, Pennsylvania, May 30, 1899." The type, in Nash's herbarium, consists of four vernal specimens with partially included, immature panicles. The lower sheaths are papillose-hispid, less densely so than common in *P. clandestinum*, the upper glabrous. The immature spikelets are 2.7 mm. long.

DESCRIPTION.

Vernal form in large, dense clumps, sometimes with strong rootstocks, 5 to 10 cm. long; culms stout, 70 cm. to 1.5 meters high, erect, scabrous to papillose-hispid, at least below the nodes; sheaths as long as the internodes or overlapping until after the branches appear, loose, strongly papillose-hispid to nearly glabrous, a puberulent ring at the summit; ligules 0.5 mm. long; blades spreading or finally reflexed, 10 to 20 cm. long, 1.2 to 3 cm. wide, slightly tapering to the cordate-clasping base, acuminate, scabrous on both surfaces, at least toward the end, usually ciliate at the base; panicles finally rather long-exserted, 8 to 15 cm. long, about three-fourths as wide, many-flowered, the flexuous branches in distant fascicles, short spikelet-bearing branchlets in the axils; spikelets 2.7 to 3 mm. long, 1.4 to 1.5 mm. wide, obovate-oblong, sparsely pubescent; first glume one-third the length of the spikelet, subacute or obtuse; second glume slightly shorter than the fruit and sterile lemma; fruit elliptic 2.1 to 2.3 mm. long, 1.2 to 1.3 mm. wide.

---

[a] Sp. Pl. ed. 2. 86. 1762.

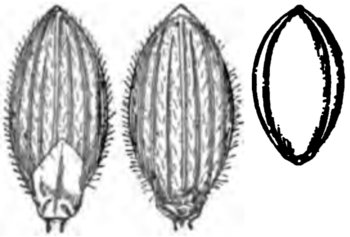


FIG. 353.—*P. clandestinum.* From type specimen of *P. pedunculatum* Torr.

Autumnal form erect or leaning, sparingly branching, often before the maturity of the primary panicle, from the middle and upper nodes, the branches leafy, the swollen, bristly sheaths overlapping on the shortened internodes and inclosing wholly or partially the secondary panicles; spikelets more turgid than those of the primary panicles.

Occasional specimens, such as the type of *P. decoloratum*, and *Eggert* 114 and 253, *Merill* 198, and one specimen of *Small & Heller*, Blowing Rock Mountain, Tenn., in 1891 (a second being the ordinary form) are bristly only on the lower sheaths, the upper glabrous or only scabrous. This lack of pubescence is not found to be correlated with smaller spikelets nor with scarcely-exserted panicles. In *Andrews* 11 the spikelets are exceptionally small, only 2.5 mm. long, but the sheaths and culms are bristly, and the developed panicle is long-exserted and an immature one scarcely exserted.

DISTRIBUTION.

Moist, mostly sandy ground, Maine to Kansas, south to Florida and Texas.

MAINE: Foxcroft, *Fernald* 292, 518; Farmington, *Chamberlain & Knowlton* in 1902.

NEW HAMPSHIRE: Gilford, *Carter* 111 (Hitchcock Herb.).

VERMONT: Burlington, *Flynn* in 1900 (Hitchcock Herb.).

MASSACHUSETTS: South Hadley, *Cook* in 1887.

CONNECTICUT: Pine Meadow, *Bissell* 5544; Southington, *Andrews* 11, *Bissell* 5546; South Manchester, *Hitchcock* 583; South Glastonbury, *Wilson* 17; Greens Farms, *Pollard* 92; Oxford, *Harger* in Kneucker Gram. Exs. 424.

RHODE ISLAND: Without locality, *Congdon* (Hitchcock Herb.).

NEW YORK: Oneida County, *Haberer* 1257.

NEW JERSEY: Clifton, *Nash* in 1891; Stockholm, *Van Sickle* in 1895; Woodbury, *Smith* 112; South Amboy, *Mackenzie* 1360; Wildwood, *Chase* 3513.

PENNSYLVANIA: Easton, *Porter* in 1895 and 1897; Refton, *Heller* in 1901; Mount Hope, *Heller* 4781; Tullytown, *Bicknell* in 1899.

OHIO: Berea, *Ashcroft* in 1897; Cadiz Junction, *Kellerman* 6799½; New Plymouth, *Kellerman* 6883; Vinton, *Kellerman* 6888.

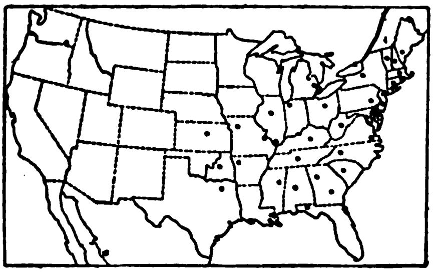


FIG. 354.—Distribution of *P. clandestinum.*

INDIANA: Michigan City, *Hill* 158 in 1906; Brazil, *Somes* 231.

ILLINOIS: Peoria, *Brendel*, *McDonald* in 1903; without locality, *Wolf* in 1882.

MICHIGAN: Port Huron, *Dodge* in 1904 and 1909.

MISSOURI: St. Louis, *Eggert* 114, 253, *Kellogg* 18; Sibley, *Bush* 4003; Independence, *Bush* 733 in part; Courtney, *Bush* 3977; Allenton, *Kellogg* in 1901; Monteer, *Bush* 4651, 4865.

KANSAS: Pottawatomie County, *Norton* 878.

DELAWARE: Wilmington, *Commons* 27, 302; Centerville, *Commons* 300.

MARYLAND: High Island, *Ward* in 1878; West Chevy Chase, *Chase* 3272, *Hitchcock* 432; Riverdale, *Chase* 2366.

DISTRICT OF COLUMBIA: *Ball* 702, *Hitchcock* 431, *Kearney* 21, 32, *Merrill* 198, *Pollard* 365, *Scribner* in 1894, *Sudworth* in 1890, *Vasey* in 1874 and 1887, *Ward* in 1880, *Williams* 7.

VIRGINIA: Portsmouth, *Noyes* 68.

WEST VIRGINIA: Aurora, *Steele* in 1898; Morgantown, *Hitchcock* 584; Fayette County, *Kellerman* 6900.

NORTH CAROLINA: Biltmore, *Biltmore Herb.* 804, 804b; Blowing Rock Mountain, *Small & Heller* in 1891; Heiligs Mill, *Small & Heller* 348; Magnetic City, *Wetherby* 32; Chapel Hill, *Ashe*, *Chase* 3078.

SOUTH CAROLINA: Clemson College, *House* 2132.

GEORGIA: Gwinnett County, *Small* in 1893; Stone Mountain, *Hitchcock* 585; Clarke County, *Harper* 70.

FLORIDA: Without locality, *Chapman*.

KENTUCKY: Poor Fork, *Kearney* 229.

TENNESSEE: Wolf Creek, *Kearney* in 1897, *Ruth* 60; Ducktown, *Chambliss* 18, 78; Hiwassee Gorge, *Kearney* 330; Blowing Rock Mountain, *Small & Heller* in 1891.

ALABAMA: Without locality, *Buckley* (Mo. Bot. Gard. Herb.).

MISSISSIPPI: Starkville, *Chase* 4463.

ARKANSAS: Northwest Arkansas, *Harvey* 32.

TEXAS: Dallas, *Reverchon* in 1875 (Gray Herb.).

OKLAHOMA: Supulpa, *Bush* 718 (Mo. Bot. Gard. Herb.).

190. Panicum latifolium L.

Panicum latifolium L. Sp. Pl. 58. 1753. "*Habitat in* America." The type, in the Linnæan Herbarium, is a portion of a vernal culm with two leaves and a short-exserted but well-developed primary panicle.[a]

Milium latifolium Moench, Meth. Pl. 204. 1794. Based on *Panicum latifolium* L.

Panicum macrocarpon LeConte in Torr. Cat. Pl. N. Y. 91. 1819. No locality nor specimen is cited. In the Torrey Herbarium is a specimen with the following label in Torrey's writing: "'Panicum macrocarpon Elliott' LeConte." Torrey's note on this specimen would seem to have been written before the publication of the species as above, as he seems to think LeConte credits the name to Elliott. No data are given on the label or sheet. No other specimen could be found in the herbarium that could be connected with LeConte's name. If LeConte had a herbarium and if it be in existence, its whereabouts is unknown. The above specimen, which is taken as the type of *P. macrocarpon*, is a single plant with simple culm and immature unexpanded panicle.

---

[a] For a full discussion of the reasons for considering this specimen to be the type, see Hitchcock, Contr. Nat. Herb. **12**: 118. 1908. The reasons are briefly: In the Linnæan Herbarium are two sheets upon which Linnæus has written the name. One of these, which is *Panicum zizanioides* H. B. K., was received from Browne after the preparation of the manuscript of the Species Plantarum. The second sheet includes two vernal specimens, *Panicum macrocarpon* LeConte, and *P. clandestinum* L. The first of these is taken as the type as it corresponds better to the description. The sheet marked "17 K latifolium," meaning that the specimens were received from Kalm and the species is no. 17, *P. latifolium*, in the Species Plantarum. Appended to the original description, Linnæus cites two synonyms, one from Morison, which is probably *P. boscii* Poir., and one from Sloane, which is *P. sloanei* Griseb. The Sloane specimen is considered by some authors to be the type of *P. latifolium*, but the Sloane synonym is erroneously cited.

Panicum schnecki Ashe, N. C. Agr. Exp. Sta. Bull. 175: 116. 1900. "River bottoms, southern Indiana and Illinois, June." The type, in Ashe's herbarium, consists of two culms, one sterile and one with an immature, scarcely-exserted panicle. On the accompanying label with the printed heading "Herbarium of W. W. Ashe" is written in Ashe's hand "Panicum Schnecki W. W. Ashe," but no data whatever are given.

This is the species described by Torrey[a] as *P. nervosum* Muhl. *Panicum macrocarpon* LeConte, though published in his Catalogue seems to have been unknown to Torrey.[b]

DESCRIPTION.

Vernal plants in clumps of few to several culms from a knotted crown; culms rather stout, 45 cm. to 1 meter high, erect, glabrous, or the lower internodes sometimes sparsely pubescent, the nodes glabrous, rarely with a few hairs; sheaths shorter than the internodes, ciliate on the margin, a pubescent ring at the juncture with the blade, otherwise glabrous, or the lower sparsely downy; ligules nearly obsolete; blades rather thin, ascending or spreading 8 to 18 cm. long, 1.5 to 4 cm. wide, the lower smaller, acuminate, cordate-clasping at the base, glabrous, rarely sparsely pubescent on one or both surfaces, short-ciliate at least toward the base; panicles usually short-exserted or sometimes finally long-exserted, 7 to 15 cm. long, about two-thirds as wide, the long, few-flowered, nearly simple branches stiffly ascending; spikelets rather short-pediceled, commonly more or less clustered in twos or threes, 3.4 to 3.7 mm. long, 1.8 to 2 mm. wide, oval-obovate, turgid, sparsely pubescent; first glume one-third to half the length of the spikelet, pointed; second glume and sterile lemma scarcely covering the fruit at maturity; fruit 3 mm. long, 1.6 to 1.8 mm. wide, elliptic, minutely pubescent on the obscurely apiculate apex.

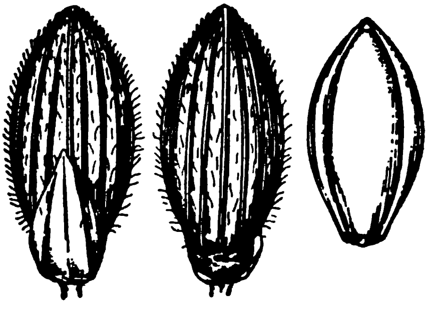


FIG. 355.—*P. latifolium.* From type specimen of *P. macrocarpon* LeConte.

Autumnal form more or less spreading, branching from the middle nodes, the upper leaves of the branches crowded and spreading, not much reduced, the small panicles partly included.

In this species the culms, nodes, and leaves are typically glabrous, but occasional specimens show more or less pubescence. The following represent this variation: *Dorner* 89, *Shear* in 1899, *Ward* in 1880, *Wetherby* 53.

---

[a] Fl. North. & Mid. U. S. 143. 1823.

[b] See *P. macrocarpon* Torr. under *P. scribnerianum*, page 283.

DISTRIBUTION.

Rocky or sandy woods, Maine to Minnesota, south to North Carolina and Kansas.

Maine: Orono, *Fernald* 346; Basin Mills, *Knight* 53; North Berwick, *Parlin* 1191; Fayette, *Chase* 3367; East Auburn, *Merrill* 1243.

New Hampshire: Surry, *Fernald* 276 (Gray Herb.).

Vermont: Manchester, *Day* 216; Barnet, *Blanchard* in 1883.

Massachusetts: South Hadley, *Cook* in 1887.

Connecticut: Southington, *Andrews* 44, *Bissell* 5548, 5549, 5550; Old Lyme, *Graves* 164; Montville, *Graves* 163; Waterford, *Graves* in 1898; Stratford, *Eames* in 1894; Oxford, *Harger* in Kneucker Gram. Exs. 423.

Rhode Island: Providence, *Olney*.

New York: Ithaca, *Ashe*, *Coville* in 1885, *Dudley* in 1885; Oxford, *Coville* in 1884; Apalachin, *Fenno* 3, 5, 10, 11, 12; Cairo, *Nash* in 1893; Long Island, *Bicknell* in 1903 and 1905.

Ontario: Galt, *Herriot* in 1898 and 1901; Queenstown Heights, *Macoun* 26326, 26327; Tilsonburg, *Macoun* 26325.

New Jersey: Clifton, *Nash* in 1892; Phillipsburg, *Porter* in 1892 and 1895; Mount Arlington, *Mackenzie* 1414.

Pennsylvania: Easton, *Porter* in 1895, 1897, and 1898; Germantown, *Stone* in 1889; Westchester, *Windle* in 1904; McCalls Ferry, *Rose & Painter* 8135.

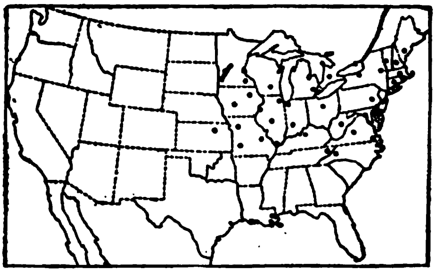


Fig. 356.—Distribution of *P. latifolium*.

Ohio: Niles, *Ingraham* in 1891; Lancaster, *Kellerman* 6766; Cadiz Junction, *Kellerman* 6799.

Indiana: Miller, *Chase* 1541, *Umbach* 1791 and in 1898; Pine, *Umbach* in 1896; Wells County, *Deam* in 1903; Lafayette, *Dorner* 82.

Illinois: Beverly Hills, *Bebb* 882, *Chase* 1824; Savanna, *Chase* 1887; Glasford, *Wilcox* 22, 41; Mossville, *Chase* 889; Antioch, *Gleason & Shobe* 268; Peoria, *Brendel*, *McDonald* 33; Urbana, *Waite* in 1886; St. Clair County, *Eggert* 239; Wabash County, *Schneck* in 1879 and 1905.

Michigan: Detroit, *Farwell* 1378; Port Huron, *Dodge* in 1909.

Wisconsin: Newbold, *Cheney* 1545; Milwaukee, *Chase* 1947.

Minnesota: Lindstrom, *Taylor* in 1892; Spring Grove, *Rosendahl* 487; Houston, *Mearns* 791.

Iowa: Fayette County, *Fink* 593; Ames, *Ball* 40, 155, *Ball & Sample* 6; Iowa City, *Shimek* in 1894; Mount Pleasant, *Mills* in 1894.

Missouri: McDonald County, *Bush* 91; Independence, *Bush* in 1884; Swan, *Bush* 8; Monteer, *Bush* 190; Courtney, *Bush* 1732, 3981; Sibley, *Bush* 4001, 4807; Jefferson Barracks, *Kellogg* 17; Midway, *E. J. Palmer* 1405.

Kansas: Manhattan, *Kellerman* (Hitchcock Herb.).

Delaware: Centerville, *Commons* 301 in part.

Maryland: Garrett County, *J. D. Smith* in 1879.

District of Columbia: *Shear* in 1899, *Ward* in 1880.

Virginia: Norfolk, *Pollard & Maxon* in 1900; Munden, *Mackenzie* 1709; Fairfax County, *Hitchcock* 587; Carroll County, *Small* in 1892; Peaks of Otter, *Palmer* 10.

West Virginia: Aurora, *Steele* in 1898; Marlinton, *Kellerman* 6899.

NORTH CAROLINA: Magnetic City, *Wetherby* 53; Blowing Rock Mountain, *Small & Heller* 394; Biltmore, *Hitchcock* 588; Linville, *Hitchcock* 589; Grandfather Mountain, *Hitchcock* 433.

KENTUCKY: Lexington, *Short* 5 (Gray Herb.).

TENNESSEE: Roan Mountain, *Hitchcock* 586.

191. Panicum boscii Poir.

Panicum boscii Poir. in Lam. Encycl. Suppl. **4**: 278. 1816. "Cette plante a été recueillie à la Caroline par M. Bosc. (V. s. in herb. Desfont.)." The type, in the Desfontaines Herbarium, consists of three early autumnal culms, the blades nearly glabrous, the spikelets 4.1 mm. long. The accompanying label reads "Panicum boscii poir. enc. Suppl. (scr. Poiret.) Amer. Sept. à Bosc."

Panicum waltheri Poir. in Lam. Encycl. Suppl. **4**: 282. 1816, not *P. walteri* Pursh, 1814. Based on "*Panicum latifolium* Mich. Flor. bor. Amer. 1. pag. 49.—Non Linn. * * * (*V. s. in Herb. Mich.*)." The specimen in the Michaux Herbarium under the name of *P. latifolium*, and labeled "in pratis sylvestris Virginiæ Carolinæ," is a somewhat pubescent autumnal specimen of *P. boscii*. Scribner [a] uses this name (as *P. walteri* Poir.) for *P. boscii*.

Panicum latifolium australis[*e*] Vasey, U. S. Dept. Agr. Div. Bot. Bull. **8**: 34. 1889. "Alabama to Texas." The type, in the National Herbarium, consists of two vernal culms, the sheaths and blades glabrous or nearly so, the spikelets 4.3 mm. long. The specimen was collected by Dr. Charles Mohr, at Thomasville, Clark County, Ala., April 16, 1888.

Panicum porterianum Nash, Bull. Torrey Club **22**: 420. 1895. The author proposes a new name for "*Panicum latifolium* Walt. Fl. Car. 73. 1788. Not Linnæus, 1753. *Panicum Walteri* Poir. in Lam. Encycl. Suppl. 4: 282. 1816. Not Pursh, 1814. *Panicum latifolium* var. *molle* Vasey, Bull. Bot. Div., U. S. Dept. of Agric. 8: 33. [error for 34] 1889." No description is given. In Walter's Flora Linnæus's diagnosis of *P. latifolium* is copied with no additional description, and there is no specimen in Walter's herbarium [b] labeled *P. latifolium* by Walter. A fragmentary panicle and two leaves, doubtfully referable to *P. commutatum* Schult., labeled "Panicum 469," possibly may be the specimen to which Walter applied the name. In the absence of an authentic specimen, and because *P. latifolium* Walt. must be considered a misapplication of *P. latifolium* L., *P. porterianum* is here regarded as based upon the next name cited, *P. walteri* Poir. Since the name was given in honor of Dr. Porter, doubtless because of his distinguishing this form from what he understood to be *P. latifolium* L.,[c] it is more fitting also that the name *P. porterianum* be based on the name which he applied to this form, that is, *P. walteri* Poir.

This species has been described as *P. latifolium* L. by many American authors.

DESCRIPTION.

Vernal form resembling that of *P. latifolium*, usually in larger clumps; culms 40 to to 70 cm. high, erect or ascending, glabrous or minutely puberulent, rarely somewhat papillose, the nodes retrorsely bearded; sheaths much shorter than the internodes, ciliate, a pubescent ring at the juncture with the blade, otherwise glabrous or sparsely downy-pilose; ligules about 1 mm. long; blades spreading, 7 to 12 cm. long, 1.5 to 3 cm. wide, more or less tapering toward the sparsely ciliate, cordate base, acuminate, glabrous on both surfaces or puberulent on the lower and sparsely pubescent on the upper surface; panicles 6 to 12 cm. long, as wide or wider, the main axis and the flexuous spreading or ascending branches puberulent; spikelets 4 to 4.5 mm. long, 2 to 2.2 mm. wide, oblong-obovate, less turgid than in *P. latifolium*, papillose-pubescent; first glume one-third to two-fifths the length of the spikelet, pointed; second glume slightly shorter than the fruit and sterile lemma at maturity; fruit 3.2 to 3.5 mm. long, 1.5 to 1.6 mm. wide, elliptic, minutely pubescent, and usually black at the tip.

---

[a] Mem. Torrey Club. **5**: 32. 1894.

[b] For an account of the grasses in Walter's herbarium see Hitchcock, Rep. Mo. Bot. Gard. **16**: 36. 1905.

[c] Bull. Torrey Club **20**: 194. 1893.

Autumnal form as in *P. latifolium*, rather more freely branching, sometimes top-heavy reclining; spikelets more turgid than those of the primary panicles.

As in *P. commutatum*, what appear to be simple, very leafy, autumnal culms are commonly formed by the replacing of the fallen primary summit by the uppermost branch. These culms are often recurved, the blades all turned into the plane of the branch, or even all to one side, from a twisting of the internodes, and more or less unsymmetrically expanded in the middle, the whole producing a very different aspect from that of the vernal form.

This species is closely related to *P. latifolium* and is often difficult to distinguish from pubescent specimens of that species.

The form distinguished by Vasey as *P. latifolium australe* can not be satisfactorily separated. The longer spikelets and blades narrowed to the base, or rather expanded in the middle, are not correlated. Specimens with large spikelets are mostly of southern range, but those with blades strongly tapering to the base occur throughout, *Andrews* 40, Connecticut, being a pronounced case. The following specimens represent this variation: *Chase* 4491, *Combs* 334, 337, 399, 683, *Commons* 361, *Hall* 828, *Harper* 1812, *Mohr* in 1888, *Nash* 2329. In most of the Alabama and Florida specimens the longer spikelets and tapering blades are correlated and might be given subspecific rank but for the more numerous intermediate specimens. The larger spikelets and tapering blades also occur in *P. boscii molle*.

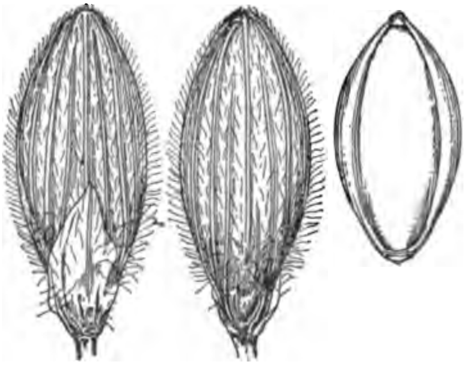


FIG. 357.—*P. boscii.* From type specimen.

The following specimens are intermediate in character between *P. boscii* and *P. boscii molle*, having blades more or less downy, or glabrous and downy blades on the same plant: *Bush* 303, 310, 3348, *Chase* 4501, *Harper* 1366, *Tracy* 3 in 1888.

DISTRIBUTION.

Woods, Massachusetts to Oklahoma, south to northern Florida and Texas.

MASSACHUSETTS: Monson, *Herb. Western High School of Washington* (Biltmore Herb.).

CONNECTICUT: Southington, *Andrews* 40, *Bissell* 5552; Ledyard, *Graves* in 1897.

NEW JERSEY: Byram Station, *Fisher* in 1897; Milburn, *Mackenzie* 2144.

PENNSYLVANIA: Lancaster County, *Heller* 4771; Upper Darby, *Smith* 154.

OHIO: Painesville, *Werner* in 1886; Cincinnati, *Lloyd* 3597.

INDIANA: Clarke County, *Deam* 5386, 6586.

ILLINOIS: Marshall County, *V. H. Chase* 1489; Jackson County, *French* in 1905; Tunnel Hill, *Ridgway* in 1902; Wabash County, *Schneck* in 1896.

MISSOURI: Allenton, *Kellogg* 15; Pleasant Grove, *Bush* 303, 310, 323; Doniphan, *Bush* 276; Swan, *Bush* 26, 4534; Monteer, *Bush* 4652, 4908.

Delaware: Wilmington, *Commons* in 1897; Centerville, *Commons* 361.

Maryland: Chesapeake Beach, *Hitchcock* 1604; Riverdale, *Chase* 2374; Plummers Island, *Hitchcock* 590.

District of Columbia: *Ball* 14, *Kearney* in 1897, *Scribner* in 1894, *Sudworth* in 1890, *Vasey* in 1884, *Ward* in 1876 and 1878.

Virginia: Rosslyn, *Dewey* 235; Glencarlyn, *Dewey* 280; Marion, *Small* in 1892; Ocean View, *Kearney* 1469; Virginia Beach, *Kearney* 1411.

North Carolina: Asheville, *Canby* 220; Biltmore, *Hitchcock* 591; Columbus, *Townsend* in 1897; West Raleigh, *Coit* 1293; Chapel Hill, *Chase* 3073; Spray, *De Chalmot;* without locality, *Vasey* in 1878.

South Carolina: Aiken, *Ravenel;* Clemson College, *House* 2136; Orangeburg, *Hitchcock* 19, 1412.

Georgia: Stone Mountain, *Hitchcock* 222, *Eggert* 40; Clyo, *Harper* 1812; Dublin, *Harper* 1366; Thomson, *Bartlett* 1505; Tallulah Falls, *Cuthbert* in 1899.

Florida: Chipola River, *Curtiss* K.; Tallahassee, *Nash* 2329; Monticello, *Combs* 334, 337; Quincy, *Combs* 399; Chipley, *Combs* 683.

Kentucky: Pine Mountain, *Kearney* 258; without locality, *Short*.

Tennessee: Franklin County, *Eggert* 26 in 1897; Hiwassee Gorge, *Kearney* 325; White Cliff Springs, *Scribner* in 1890; Knox County, *Kearney* in 1894.

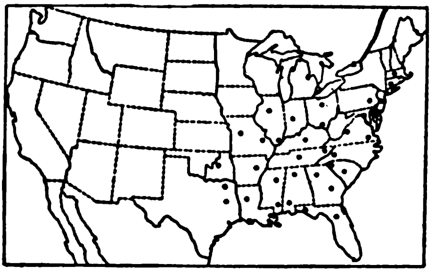


Fig. 358.—Distribution of *P. boscii*.

Alabama: Northern Alabama, *Vasey* in 1878; Scottsboro, *Chase* 4501; Pisgah to Tennessee River, *Chase* 4491; Auburn, *Hitchcock* 1320; Montgomery, *Carver* 64; Dadeville, *Pollard & Maxon* 136; Talladega Springs, *Pollard & Maxon* 247; Thomasville, *Mohr* in 1888.

Mississippi: Meridian, *Tracy* 3252; Starkville, *Tracy* 3 in 1888; Jackson, *Hitchcock* 1300.

Arkansas: Benton County, *Plank* 7.

Louisiana: Calhoun, *Hitchcock* 1272; Shreveport, *Hitchcock* 1244.

Texas: Monterey, *Reverchon* 4144 b; Houston, *Hall* 828 in part; without locality, *Nealley* in 1889.

Oklahoma: Without locality, *Butler* 43 (Mo. Bot. Gard. Herb.).

191a. Panicum boscii molle (Vasey) Hitchc. & Chase.

Panicum latifolium molle Vasey U. S. Dept. Agr. Div. Bot. Bull. **8**: 34. 1889. "Virginia to Louisiana." The type, in the National Herbarium, consists of two vernal plants, with softly villous culms and sheaths, bearded nodes, and nearly mature primary panicles. The accompanying label in Vasey's hand reads: "Panicum latifolium var. molle Vasey, a state downy all over, Washington, D. C.,[a] L. F. Ward."

Panicum walteri molle Porter, Bull. Torrey Club **20**: 194. 1893. Presumably based on *P. latifolium molle* Vasey, since "(Vasey)" is given as authority, though Vasey's combination is not cited.

---

[a] "Washington, D. C.," was commonly given as locality for the surrounding region, and the specimens may have been collected on the Virginia side of the Potomac as indicated in the range given.

Panicum pubifolium Nash, Bull. Torrey Club **26**: 577. 1899. "*P. latifolium* var. *molle* Vasey, Contr. U. S. Nat. Herb. **3**: 33. 1892. Not *P. molle* Sw. 1788," is cited and a description follows. As no type is cited this is evidently primarily a change of name, based on *P. latifolium molle* Vasey.

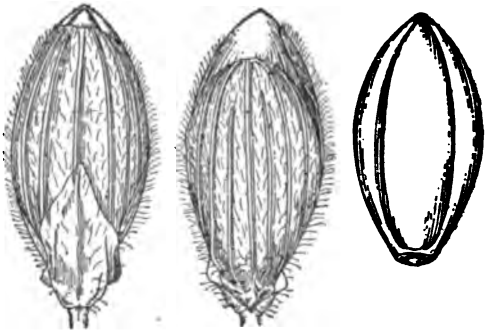


FIG. 359.—*P. boscii molle*. From type specimen.

Panicum boscii molle Hitchc. & Chase in Robinson, Rhodora **10**: 64. 1908. Based on "*P. latifolium* var. *molle* Vasey."

DESCRIPTION.

Closely resembling *P. boscii* and often scarcely to be distinguished from it; culms on the average not so tall, downy-villous; sheaths rather sparsely villous; blades velvety on the under surface, sparsely appressed-pubescent on the upper; panicle axis and branches puberulent and somewhat pilose; spikelets rather more strongly pubescent than in the species.

The Florida specimens, together with *Biltmore Herbarium* 5185b, *Dewey* 73 and *Steele* in 1896, have spikelets mostly larger than 4.5 mm. long, and correspond with the variation of the species which includes *P. latifolium australe* Vasey.

DISTRIBUTION.

Woods, Connecticut to Illinois and Arkansas, south to Florida and Louisiana.

Connecticut: Norwalk, *Bissell* 5551.
New York: Long Island, *Bicknell* in 1903, 1904, and 1905.
New Jersey: Great Notch, *Nash* in 1893.
Pennsylvania: Germantown, *Stone* in 1889; Easton, *Porter* in 1891, 1895, and 1898; Westchester, *Windle* in 1904; Haines Station, *Heller* 4779.

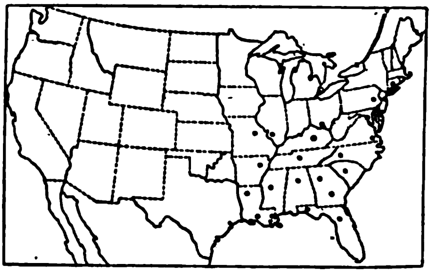


FIG. 360.—Distribution of *P. boscii molle*.

Ohio: Cincinnati, *James*.
Illinois: Union County, *French* in 1872.
Missouri: Monteer, *Bush* 754; Noel, *Bush* 5060.
Delaware: Newark, *Hitchcock* 592.
District of Columbia: *Ball* 703, *Hitchcock* 435, *Merrill* 202, 203, *Pieters* in 1896, *Pollard* 412, *Seaman* in 1873, *Steele* in 1896, *Vasey* in 1873 and 1884, *Ward* in 1881 and 1882.
Virginia: Glencarlyn, *Dewey* 73, 92; Four-Mile Run, *Hitchcock* 434, 436; Belfield, *Meynke* in 1904; Portsmouth, *Noyes* 104.
North Carolina: Asheville, *McCarthy* in 1888; Biltmore, *Biltmore Herb.* 5185a, 5185b; Chapel Hill, *Chase* 3054.
South Carolina: Newry, *House* 2211.
Georgia: Stone Mountain, *Hitchcock* 1344; Gwinnett County, *Small* in 1893; Cobb County, *Wilson* 27; Athens, *Harper* 15; Warm Springs, *Tracy* 8868; Augusta, *Cuthbert* 392, 1162.
Florida: Lake City, *Hitchcock* 1010½, *Rolfs* 817; Chattahoochee, *Curtiss* 6047 (Hitchcock Herb.); Madison, *Combs* 295; Gainesville, *Chase* 4208, *Combs* 738.

KENTUCKY: Irvine, *Biltmore Herb.* 9959f (Biltmore Herb.).
TENNESSEE: Knoxville, *Ruth* 70, *Scribner* in 1892; Madison County, *Bain* 189.
ALABAMA: Auburn, *Hitchcock* 1321.
MISSISSIPPI: Fairport, *Tracy* 3205; Jackson, *Hitchcock* 1301; Starkville, *Tracy* in Pollard Dist. Miss. Pl. 1409.
ARKANSAS: Benton County, *Plank* 16, 46.
LOUISIANA: Covington, *Langlois* 41 in part; Calhoun, *Hitchcock* 1283.

MISCELLANEOUS SPECIES.

192. Panicum obtusum H. B. K.

Panicum obtusum H. B. K. Nov. Gen. & Sp. 1: 98. 1815. "*Crescit in planitie montana regni Mexicani prope Guanaxuato et Burras, in humidis, alt.* 1080 *hexap.*" The type specimen, in the Bonpland Herbarium, is labeled: "Panicum obtusum Kunth, *Synops.* 174, in planitie montana Regni Mexicani, prope Guanaxuato, 1080 hex. No. 4204."

Panicum polygonoides C. Muell. Bot. Zeit. **19**: 323. 1861. "America septentrionalis, ubi forsan in Texas legit T. Drummond (Coll. No. 371)." The type specimen, bearing the published data, is in the Berlin Herbarium.

Panicum repente Buckl. Prel. Rep. Geol. Agr. Surv. Tex. App. 3. 1866. No specimen nor locality within Texas is cited. The type specimen could not be found in the herbarium of the Philadelphia Academy, where the Buckley collections are deposited. The description amply identifies the species.

Brachiaria obtusa Nash in Britton, Man. 77. 1901. Based on *Panicum obtusum* H. B. K. In this species the spikelets are placed with the back of the fruit to the axis (that is the first glume turned from the axis) as characteristic of true Panicum, not in the reverse position which characterizes Brachiaria.[a]

DESCRIPTION.

Plants perennial, usually tufted from a more or less knotted rootstock, and producing widely creeping stolons, sometimes 2 or more meters long, with long internodes, and geniculate, swollen, conspicuously villous nodes, these often with a knob-like cluster of hairy scales at the base of the extravaginal, erect branches, these clusters being produced sometimes when the branch is not developed; culms wiry, compressed, 20 to 80 cm. high, simple, usually decumbent at base, glabrous, the nodes glabrous; sheaths shorter than the internodes, glabrous, or the lower and those of the stolons sometimes villous; ligules membranaceous, about 1 mm. long; blades 3 to 20 cm. long, 2 to 7 mm. wide, erect, firm, usually involute-setaceous toward the tip, glabrous on both surfaces or sometimes with a few long hairs on the upper surface at the base; panicle usually short-exserted, 3 to 12 cm. long, about 1 cm. wide, the few, appressed, raceme-like branches densely flowered; spikelets short-pediceled along one side of a slightly flattened rachis, 3 to 3.8 mm. long, 1.5 to 1.8 mm. wide, and about 2 mm. thick, obovoid, blunt, glabrous, usually brownish; first glume nearly

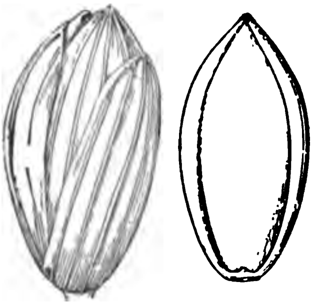


FIG. 361.—*P. obtusum*. From type specimen.

---

[a] The genus Brachiaria Ledeb. (Fl. Ross. 4: 469. 1853) is based upon *Panicum eruciformis* Sibth., in which the spikelets are placed with the back of the fruit turned from the rachis.

as long as the spikelet, 5-nerved; second glume and sterile lemma subequal, 7 to 9-nerved, the lemma subtending a rather firm palea and a staminate flower; fruit 3 to 3.5 mm. long, 1.5 to 1.7 mm. wide, subacute, smooth and shining, but very obscurely pubescent at the apex.

The Brazilian species, *P. repandum* Nees, is the only known species related to *P. obtusum*.

DISTRIBUTION.

Sandy or gravelly soil, mostly along the banks of rivers, arroyos, and irrigation ditches, western Missouri and Colorado to Texas and Arizona and southward to southern Mexico.

MISSOURI: Kansas City, *Bush* 1832, 3107 (Gray Herb.).

KANSAS: Stanton County, *Hitchcock* Pl. Kan. 572.

TEXAS: Dallas, *Hall* 827, *Reverchon* 1079 and in 1879; Kerrville, *Heller* 1741, *Smith* in 1897; Waller County, *Thurow* in 1898 and 1906; Llano, *Plank* in 1892; Amarillo, *Ball* 1139; Fort Worth, *Ward* in 1877; Abilene, *Tracy* 7935; Bexar County, *Jermy* 6; San Antonio, *Plank* in 1893; El Paso, *Jones* 4168; Fort Davis, *Havard* in 1881; Kingsville, *Piper* in 1906; Texline, *Griffiths* 5612; without locality, *Buckley* in 1881; *Nealley* in 1887.

OKLAHOMA: On the False Washita, *Palmer* 370 in 1868.

COLORADO: Rocky Ford, *Griffiths* 3309; Canyon City, *Shear* 975; Trinidad, *Shear* in 1900; Las Animas County, *Chase* 5406.

NEW MEXICO: Cabra Spring, *Pease* in 1878; McCarty, *Munson & Hopkins* in 1889; Socorro, *Plank* 76, *Vasey* in 1881; Gray, *Skehan* 94, 97; Cimarron Canyon *Griffiths* 5542; Roswell, *Earle* 301; Las Cruces, *Wooton* 1068; Silver City, *Metcalfe* 749; Mesilla, *Wooton* 64; Mesilla Park, *Hitchcock* 3830; Deming, *Hitchcock* 3763; Grant County, *Blumer* 205, *Smith* in 1897; White Water, *Mearns* 2308; without locality, *Vasey* in 1881, *Wright* 2092.

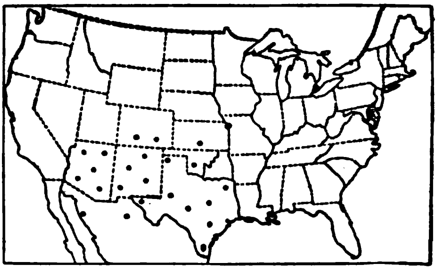


FIG. 362.—Distribution of *P. obtusum*.

ARIZONA: Moki Reservation, *Hough* 80; Beaver Creek, *MacDougal* 569, *Rusby* 864, 8921; *Toumey* in 1891; Santa Rita Mountains, *Griffiths* 3405, 6959, 7288, *Griffiths & Thornber* in 1902; St. Johns, *Griffiths* 5196; Holbrook, *Zuck* in 1896; Tucson, *Griffiths* 1514, 1546; Benson, *Griffiths* 2006, *Hitchcock* 3737; Pearce, *Griffiths* 1935; Sulphur Spring Valley, *Forbes* 1645; Patagonia, *Hitchcock* 3646, 3661; Fort Huachuca, *Wilcox* in 1894; San Pedro River, *Mearns* 1130; Bisbee, *Mearns* 925; San Bernardino Ranch, *Mearns* 773; near Monument 88 (Mexican Boundary), *Mearns* 1845.

MEXICO: La Ventura, *Nelson* 3908; Saltillo, *Palmer* 394 in 1898; Chihuahua, *Nelson* 6352, *Pringle* 476; Nogales, *Griffiths* 6800; Durango, *Palmer* 175 in 1896; Conception del Oro, *Palmer* 266 in 1904; San Luis Potosí, *Palmer* 590 in 1898, *Parry & Palmer* 960, *Schaffner* 148; Faral, *Schumann* 1714.

193. Panicum hemitomon Schult.

Panicum walteri Ell. Bot. S. C. & Ga. 1: 115. 1816, not Pursh, 1814. "Grows in damp soils. On Charleston neck, common. Macleod's pond, 6½ miles from Savannah, on the Ogechee road." The type, in the Elliott Herbarium, consists of the upper portions of two culms, one sterile, the other with an immature panicle. Attached to this specimen is a label which reads: "Panicum Walteri mihi. Hab. in humidis circa stagnum, 6½ a Sav: versus Oquechee. Flor: Ma. 478." Elliott gives "P. dimidiatum, Walt. p. 72" as a synonym.

Panicum walteri Muhl. Descr. Gram. 108. 1817, not Pursh, 1814. No locality nor specimen is cited, but after the description the author adds "*P. dimidiatum* Walter secundum Elliott." The specimen in the Muhlenberg Herbarium is labeled "Panicum dimidiatum Walter, Ell. 478," and is evidently a duplicate of Elliott's specimen.

Panicum hemitomon Schult. Mant. 2: 227. 1824. Based on *Panicum walteri* Muhl.

Panicum carolinianum Spreng. Syst. Veg. 1: 310. 1825. Sprengel's name appears to be based on *P. walteri* Ell. as he cites after the brief description, "*Carol. austr.* (P. Walteri Ell.)."

Panicum carinatum Torr. in Curtis, Bost. Journ. Nat. Hist. 1: 137. 1835, not Presl, 1830. "Hab. swamps," [around Wilmington, N. C.]. Curtis's specimen, labeled "Panicum carinatum n. sp. Tor. mss. North Carolina. Mr. M. A. Curtis," is in the Torrey Herbarium. This is taken as the type since Torrey evidently intended this as a new species, although "P. Walteri Ell." is cited as a synonym.

Panicum digitarioides Carpenter; Curtis, Amer. Journ. Sci. II. 7: 410. 1849, not Rasp. 1833. This is mentioned as a synonym under *P. carinatum* Torr., Curtis doubtless taking the name from specimens distributed by Carpenter under this name. Such a specimen, collected by "W. M. Carpenter, prairie ponds, Opelousas & Attackopay La.," is in the Gray Herbarium. The species is later described by Steudel[a] under this name, his description being a translation of that of Curtis.

Panicum curtisii Chapm. Fl. South. U. S. 573. 1860, not Steud. 1854. This is proposed as a new name for "P. Walteri, *Ell.*, not of *Poiret* nor *Pursh.* P. carinatum, *Torr.*, in Curtis's Plants, Wilmington, not of *Presl.*"

Brachiaria digitarioides Nash, in Britton, Man. 77. 1901. Based on *Panicum digitarioides* Carpenter.

DESCRIPTION.

Plants aquatic or semiaquatic, with extensively creeping rootstalks often producing numerous sterile shoots with overlapping, sometimes densely hirsute sheaths, and blades 10 to 25 cm. long and 8 to 12 mm. wide, strigose on one or both surfaces; fertile culms erect, 0.5 to 1.5 meters or more high, stout, usually hard, rarely rather soft and flaccid about the water line, glabrous; submerged sheaths rather loose and papery, often nodulose, aerial sheaths shorter than the internodes, close, glabrous or ciliate on the margin, rarely hirsute toward the summit like those of the sterile shoots, or the lower hirsute throughout; ligules lacerate-ciliate, about 1 mm. long; blades ascending or spreading, 10 to 25 cm. long, 7 to 15 mm. wide, acuminate, rounded at base, firm, usually scabrous on the upper surface, smooth below; panicles short-exserted, 15 to 30 cm. long, very narrow, the branches erect or ascending, solitary or 2 or 3 in a fascicle, the lower distant, gradually approximate upward, 2 to 10 cm. long, bearing short, appressed branchlets or subsessile spikelets along the triquetrous, scabrous rachis; spikelets 2.4 to 2.7 mm. long, 0.8 to 1 mm. wide, lanceolate, acute, often slightly laterally compressed (that is the glumes so keeled that the spikelet lies on its side); first glume clasping, about half the length of spikelet, acute, 3-nerved; second glume strongly keeled, somewhat boat-shaped, acute, 3 to 5-nerved, slightly shorter than the 5-nerved sterile lemma, the latter inclosing a membranaceous, scabrous-nerved palea of nearly equal length; fruit 2.3 to 2.5 mm. long, 0.7 mm. wide, slightly boat-shaped, elliptic, acute, smooth and shining, not rigid, the margins of the lemma inrolled toward the base only, the apex of the palea scarcely inclosed.

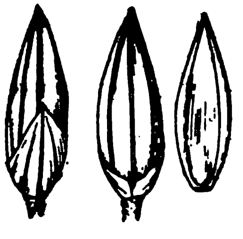


FIG. 363.—*P. hemitomon.* From type specimen of *P. walteri* Muhl. in the Muhlenberg Herbarium.

In this species the spikelets rarely perfect their grains. *P. hemitomon* departs somewhat from the typical species of Panicum in that the fruit is less rigid and the tip of the palea is not entirely inclosed by the fertile lemma. In these characters and in its inflorescence and aquatic habit it approaches Hymenachne.

---

[a] Syn. Pl. Glum. 1: 75. 1854.

In some parts of Florida this species, known as "maiden cane," becomes a troublesome weed in cultivated soil on account of the creeping rootstocks. In this situation it very rarely produces flowering culms.

DISTRIBUTION.

In moist soil, along river banks and ditches, borders of lakes and ponds, often in water, Delaware to Florida and west to Texas.

Delaware: Millsboro, *Commons* 23 in 1884.

North Carolina: Burgaw, *Hyams;* Wilmington, *Kearney* 269.

South Carolina: Society Hill, *Curtis* (Gray Herb.).

Georgia: Sumter County, *Harper* 1007.

Florida: Jacksonville, *Curtiss* 3585, 4811, *Kearney* 157; Baldwin, *Combs* 69; Lake City, *Combs* 87, 206; Madison, *Combs* 287; De Funiak Springs, *Combs* 443; Econfina, *Combs* 680; Eustis, *Nash* 745; Lake Harris, *Chase* 4121; Homosassa, *Combs* 960; Ellzey, *Combs* 832; Bronson, *Combs* 836; Waldo, *Combs* 711; Braidentown, *Combs* 1270, 1323; Palma Sola, *Tracy* 6731; Tampa, *Garber* in 1876; Bartow, *Combs* 1195; Hastings, *Tracy* 8847; Jensen, *Hitchcock* 744; Myers, *Hitchcock* 863; Orange Glade, *Eaton* 574; Miami, *Hitchcock* 696; without locality, *Rugel* 347.

Alabama: Mobile, *Mohr* in 1882.

Louisiana: Pointe a la Hache, *Langlois* 46 in 1879; New Orleans, *Drummond* 461.

Texas: Big Sandy, *Reverchon* 2341; Hempstead, *Hall* 820; Waller, *Thurow* in 1898; Kounze, *Nealley* 40 in 1892; without locality, *Drummond* 367.

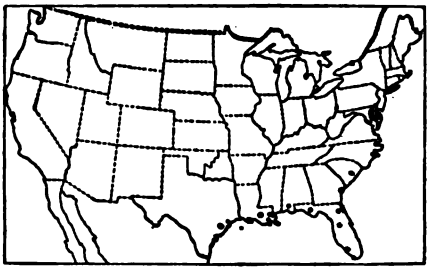


Fig. 364.—Distribution of *P. hemitomon.*

194. Panicum ciliatissimum Buckl.

Panicum ciliatissimum Buckl. Prel. Rep. Geol. Agr. Surv. Tex. App. 4. 1866. "Northern Texas." The type is in the herbarium of the Philadelphia Academy. No locality is given on the label other than "Texas."

DESCRIPTION.

Plants perennial, producing long, leafy stolons, with short internodes, rooting at the swollen nodes, the sheaths mostly longer than the internodes but usually not inclosing them, the blades short, firm, and divaricately spreading; flowering culms usually sparingly branching, erect or ascending, 15 to 40 cm. high, glabrous, the nodes bearded; sheaths sparsely, or sometimes rather densely, pilose, mostly shorter

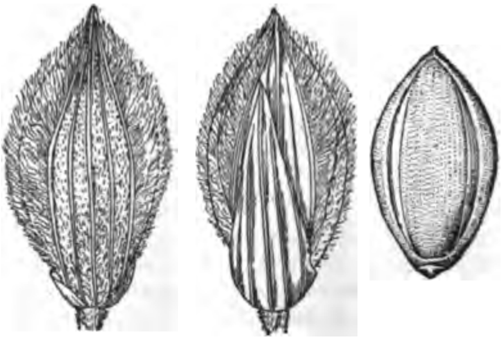


Fig. 365.—*P. ciliatissimum.* From type specimen.

than the internodes; ligules densely hairy, less than 1 mm. long; blades 3 to 7 cm. long, 3 to 5 mm. wide, tapering from near the rounded base to a sharp point, flat, puberulent or glabrous, usually ciliate along the lower portion of the thick, white margin; panicles finally long-exserted, 3 to 6 cm. long, rarely over 1 cm. wide, the few, erect branches bearing approximate, short-pediceled spikelets, placed with the back of the fruit turned from the rachis, that is the first glume toward the rachis; spikelets 4 mm. long, about 1.8 mm. wide, pointed; first glume three-fourths the length of the spikelet or more, cuneate, 5-nerved, glabrous, or with a few silky hairs at the very base; second glume and sterile lemma subequal, exceeding the fruit, 5-nerved, the internerves densely silky pubescent, or in the lemma sometimes nearly glabrous, the portion from the lateral nerves to the margins densely clothed with white and glistening silky hairs, the sterile palea about two-thirds as long as its lemma; fruit 3 mm. long, about 1.6 mm. wide, ellipsoid, apiculate, transversely rugose.

This species is somewhat doubtfully retained in Panicum. The racemose inflorescence and the reversed position of the silky, pointed spikelets show relationship with Eriochloa, in which, however, the first glume is nearly obsolete. It is most nearly allied to *Panicum cimicinum* (L.) Retz., an East Indian species.

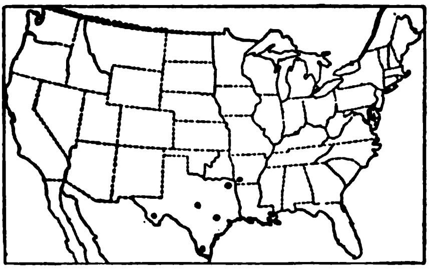


FIG. 366.—Distribution of *P. ciliatissimum*.

DISTRIBUTION.

Open sandy ground, Arkansas and Texas.

ARKANSAS: Benton County, *Plank* 8.

TEXAS: Austin, *Hall* 824; Abilene, *Tracy* 7955; San Diego, *Smith* in 1897; Pena, *Nealley* 31 in 1891; Elsordo, *Griffiths* 6441, 6445; Torrecillas, *Griffiths* 6432; Encinal, *Griffiths* 6381; western Texas, *Buckley;* without locality *Nealley* in 1887, 1889, and 1892, *Reverchon* in 1885.

195. Panicum zizanioides H. B. K.

Panicum oryzoides Swartz, Prodr. Veg. Ind. Occ. 23. 1788, not Ard. 1764. "*Jamaica.*" The type is in the Swartz Herbarium.

Panicum zizanioides H. B. K. Nov. Gen. & Sp. **1**: 100. 1815. "*Crescit in calidissimis regni Novogranatensis, in ripa fluminis Magdalenæ, inter Borjorque et Los Paxarales de Sogamozo.*" The specimen of this in the Bonplond Herbarium is not from the published locality, but "in calidissimis regni Mexicani prope Queretaro." A specimen from Humboldt in the Willdenow Herbarium is from "Amer. merid," and may be the type.

? *Panicum balbisianum* Schult. Mant. **2**: 254. 1824. Based on "*Panicum aturense Herb. Balbis n.* 2578." "*In S. Domingo. D. Bertero*" is also cited. We have not seen either of these specimens, but the description appears to apply to *P. zizanioides* to which Doell[a] refers this name.

Panicum grandiflorum Trin.; Nees, Agrost. Bras. 143. 1829. This is given as a synonym of *P. zizanioides* and credited to "*Herb. Trinii.*" No specimen so named was found in the Trinius Herbarium.

Panicum pseudoryzoides Steud. Syn. Pl. Glum. **1**: 75. 1854. The only specimen cited is "P. oryzoides *Salzm.* * * * Bahia." A specimen of this was examined in the De Candolle Herbarium.

---

[a] Mart. Fl. Bras. **2**^{2}: 228. 1877.

The name *P. latifolium* L. has been applied to this species by some authors but the type of the former belongs to a very different species.[a]

DESCRIPTION.

Plants perennial, decumbent at base, rooting and rather sparingly branching at the lower nodes; culms spreading or ascending, 0.5 to 1 meter long beyond the decumbent base, rather robust, more or less angled, glabrous, rarely with a few appressed hairs below the glabrous nodes; sheaths densely short-ciliate, otherwise glabrous or papillose-hirsute toward the summit; ligule nearly obsolete; blades 4 to 15 cm. long, 8 to 30 mm. wide, cordate-clasping, acuminate, glabrous or rarely with a few appressed hairs; panicles short-exserted, 10 to 25 cm. long, composed of a few ascending or appressed, stiff, slender branches 3 to 10 cm. long, bearing throughout their length short, appressed branchlets with more or less secund spikelets, mostly two on each branchlet, one nearly sessile, the other on a pedicel about as long as the spikelet, the branchlets angled, scabrous; spikelets 5.5 to 6 mm. long, 2 to 2.5 mm. wide, and as thick or thicker, obovoid, abruptly short-pointed, glabrous; first glume about two-thirds the length of the spikelet, acute, 3 to 5-nerved, second glume and sterile lemma equal, abruptly contracted into a short, keeled tip, 5-nerved, the lateral nerves of the lemma usually obsolete below the summit, the sterile palea about two-thirds as long as its lemma; fruit 4.7 to 5 mm. long, 1.8 to 2 mm. wide, becoming dark brown at maturity, smooth and shining, the lemma somewhat boat-shaped and with a short erose, laterally compressed crest at the apex, the apex of the palea similarly compressed and bent outward.

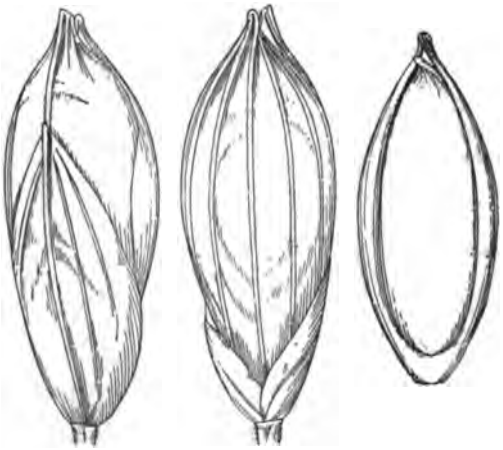


FIG. 367.—*P. zizanioides.* From specimen in Bonpland Herbarium.

Closely related to *P. zizanioides* is *Panicum paucispicatum* Morong[b] from Paraguay, which is distinguished from this by the smaller panicles, pubescent spikelets, and a more pronounced crest to the fertile lemma.

DISTRIBUTION.

Woods and copses, Mexico, West Indies, and south to Paraguay.

MEXICO: Ocuilopa, *Nelson* 3023; Trapiche de la Concepcion, *Liebmann* 394; San Juan Bautista, *Rovirosa* 624.

GUATEMALA: Dept. Alta Vera Paz, *Tuerckheim* 7699, 7700, 8785, 8796.

COSTA RICA: La Florida, *Pittier* 11276; Talamanca, *Tonduz* 8566; San Rafael, *Pittier* 2598.

---

[a] For a further discussion see Hitchcock, Contr. Nat. Herb. **12**: 118. 1908. One of the sheets upon which Linnæus has written the name "latifolium" is *P. zizanioides*. But this was received from Browne in Jamaica after the publication of the first edition of Linnæus's Species Plantarum and hence could not be the type of *P. latifolium*.

[b] Ann. N. Y. Acad. Sci. **7**: 262. 1893.

CUBA: Laguna Castillano, *Baker* 4334; Sancti Spiritus, *León* 903; without locality, *Wright* 3466.
JAMAICA: Gordon Town, *Hart* 726; Port Antonio, *Maxon* 2109.
COLOMBIA: Santa Marta, *Smith* 169.
VENEZUELA: Tovar, *Fendler* 1634 (Gray Herb.).
TOBAGO: *Eggers* 5810.
TRINIDAD: *Broadway* 2563, *Botanic Gardens Herb.* 2286, 3188.
BRITISH GUIANA: *Jenman* 6001.
DUTCH GUIANA: Surinam, *Hostmann* (Gray Herb.).
BRAZIL: Santarem, *Spruce* 706; San Gabriel da Cachoeira, *Spruce* 2344; Organ Mountains, *Wilkes* Expl. Exped. 8; Rio Janeiro, *Widgren* in 1844; without locality, *Riedel* 960.
PARAGUAY: *Morong* 536, 1001.
ECUADOR: Recreo, *Eggers* 15422 (Field Mus. Herb.).

196. **Panicum gymnocarpon** Ell.

Panicum gymnocarpon Ell. Bot. S. C. & Ga. 1: 117. 1816. "Collected near Savannah, by Dr. Baldwin." The type, in the Elliott Herbarium, consists of the upper part of a culm, being a panicle and the uppermost leaf.

Panicum monachnoides Desv. Opusc. 86. 1831. "Habitat in Brasilio." The type is in the Desvaux Herbarium. The locality given is doubtless an error as is the case with many of Desvaux's specimens.

Panicum drummondii Nees; Steud. Syn. Pl. Glum. 1: 63. 1854. "*Drum[m]ond* legit in N. Orleans." In the Berlin Herbarium is a specimen labeled "Panicum Drummondii N. ab E. in Herb. Lindh. New Orleans n. 574," which is probably the type.

Phanopyrum gymnocarpum Nash in Small, Fl. Southeast. U. S. 104. 1903. Based on *Panicum gymnocarpon* Ell. Rafinesque[a] proposed Phanopyrum as a section of Panicum, including the single species *P. gymnocarpon.* This section was raised to generic rank by Nash,[b] the distinguishing characters being the acuminate equal glumes and the short fertile lemma. This species departs somewhat from the usual characters of the genus Panicum, but the divergence does not seem sufficient to justify segregating the single species as the type of a separate genus.

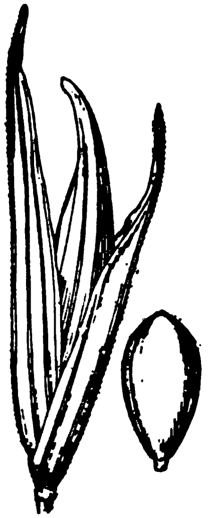


FIG. 368.—*P. gymnocarpon.* From type specimen.

DESCRIPTION.

Plants perennial, with a succulent, decumbent or creeping base, sometimes as much as 2 meters long, rooting at the nodes, glabrous throughout; culms erect or ascending, 60 to 100 cm. high, rather thick and succulent, nodes often dark colored; sheaths shorter than the internodes, sometimes ciliate near the summit, ligules membranaceous, about 1 mm. long, decurrent down the margin of the sheath; blades linear-lanceolate, 20 to 35 cm. long, or the upper and lower shorter, usually 15 to 25 mm. wide, flat, scarcely narrowed at the cordate, sparingly ciliate base, narrowed from about the middle to the acute apex, margins very scabrous; panicles finally exserted, 20 to 40 cm. long, about three-fourths as wide, consisting of several to many racemes, solitary or fascicled along a main axis, the racemes stiffly ascending, or somewhat spreading, the middle 8 to 12 cm. or occasionally as much as 18 cm. long, usually spikelet-bearing from base, the spikelets short-pediceled on short, appressed branchlets, thus appearing in somewhat scattered clusters; spikelets 6 to 7 mm. long, about 1.2 mm. wide, and, by the spreading of the glumes, about twice as thick, strongly nerved; first glume nearly as long as the sterile lemma, acuminate-pointed, the second glume exceeding the sterile lemma, both much exceeding the fruit and at maturity spreading and exposing it, acuminate-pointed, the summit of the lemma arcuate, the sterile palea obsolete; fruit 2 mm. long, 1 mm. wide, obovate, stipitate, smooth and shining.

---

[a] Bull. Bot. Seringe 220. 1830.

[b] Small, Fl. Southeast. U. S. 104. 1903.

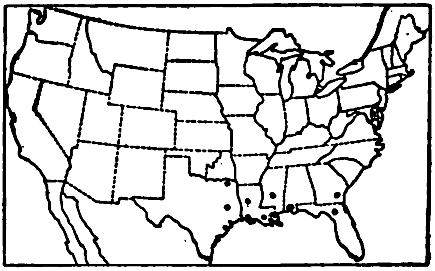


FIG. 369.—Distribution of *P. gymnocarpon*.

DISTRIBUTION.

Ditches and muddy banks of streams and lakes, Georgia and Florida to Texas.

GEORGIA: Americus, *Harper* 522.
FLORIDA: Burnside, *Combs* 1426; without locality, *Chapman*, *Rugel* 599, *Simpson* in 1890.
ALABAMA: Mobile, *Mohr* in 1887.
MISSISSIPPI: Saratoga, *Tracy* 8396.
LOUISIANA: Plaquemines Parish, *Langlois* 47, 151; Chalmette, *Tracy* 7400; Alexandria, *Hale;* Natchitoches, *Ball* 157; Lake Charles, *Chase* 4407.
TEXAS: Harrisburg, *Joor* in 1875; Mineola, *Reverchon* 2235; Columbia, *Bush* 1498; Hempstead, *Plank* 9; Waller County, *Thurow* 17, and in 1889.

26A. Panicum decolorans H. B. K.

Panicum decolorans H. B. K. Nov. Gen. & Sp. 1: 100. 1815. "*Crescit in temperatis, apricis regni Mexicani prope Queretaro, alt.* 995 hexap." The type specimen from the Bonpland Herbarium in the Paris Herbarium, bearing the published data, consists of two pieces of a culm with flat blades, one with a narrow terminal panicle about 18 cm. long. The spikelets are 5 to 5.2 mm. long.

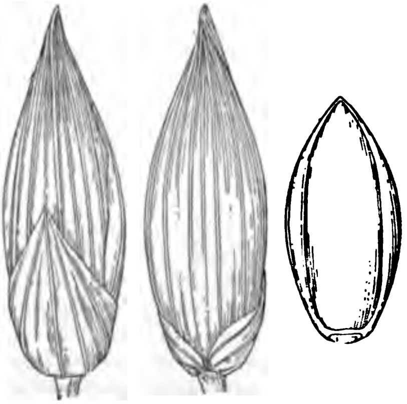


FIG. 370.—*P. decolorans*. From type specimen.

Plants tinged with purple, branching from the base; culms ascending or erect, usually from a geniculate base, simple or bearing simple, usually sterile branches from the lower one or two nodes, strongly striate or almost grooved, glabrous to sparsely papillose-hispidulous, the nodes appressed-pubescent or glabrous; sheaths short, but sometimes overlapping on the shortened lower internodes, glabrous to sparsely papillose-hispid, ciliate; ligules membranaceous-fimbriate, hardly 1 mm. long; blades 8 to 15 cm. long, 7 to 10 mm. wide, flat, glabrous on both surfaces or with a few scattered papillæ, these with or without short, stiff hairs; panicles finally exserted, 10 to 18 cm. long, usually not more than one-third, but sometimes as much as two-thirds as wide, the rather long branches usually narrowly ascending, the short-pediceled spikelets somewhat crowded on approximate, short, appressed branchlets; spikelets 4.5 to 5.2 mm. long, 1.6 mm. wide, pointed; first glume less than half the length of the spikelet, acute; second glume and sterile lemma subequal, exceeding the fruit and pointed beyond it; fruit 2.8 to 3.2 mm. long, 1.5 mm. wide.

In the original description *P. decolorans* is given as perennial, but the type lacks the basal portion, while its general character shows its relationship to those species of Capillaria having large spikelets. The pubescence appears to be extremely variable even on the same plant.

DISTRIBUTION.

Fields and waste ground, plateau of central Mexico.

MEXICO: Querétaro, *Hitchcock* 5822, *Humboldt* (Paris Herb.); Cárdenas, *Hitchcock* 5712.

DOUBTFUL SPECIES.

In the following list are given the names assigned to species of Panicum and credited to North America which have not been accounted for in the preceding pages and which can not definitely be excluded from Panicum as here limited. The list includes several nomina nuda which are mentioned only because the names are given in the Index Kewensis and consequently have become a part of the literature upon the genus.

Panicum ambitiosum Fourn. Mex. Pl. **2**: 30. 1886. "*Orizaba* (THOMAS in herb. BUCHINGER); *Vera Cruz* (herb. UZAC)." We have not seen the type nor an authentic specimen of this species. From the description it appears to be a species of Ichnanthus. The name was given by Hemsley as a nomen nudum.[a]

Panicum arundinariae Trin.; Fourn. Mex. Pl. **2**: 25. 1886. Fournier credits this name to "Trin. in sched. coll. Schiedeanae" and cites as the first of several specimens, "Absque loco (SCHIEDE)." We have not seen the Schiede specimen, which is the type. Schaffner's no. 279, cited by Fournier, which agrees fairly well with his description, is *P. virgultorum*. Trinius's name is mentioned earlier as a nomen nudum by Steudel[b] and Hemsley.[a]

Panicum brevifolium Walt. Fl. Carol. 73. 1788. No particular locality is given by Walter but his plants were all collected in the valley of the lower Santee River, South Carolina. The author evidently intended to refer his species to *P. brevifolium* L., as he quotes the Linnæan diagnosis. We may thus consider that Walter misapplied the name. What species Walter had, which he referred to *P. brevifolium*, is uncertain.

Panicum buchingeri Fourn. Mex. Pl. **2**: 30. 1886. "*Orizaba* (THOMAS in herb. BUCHINGER)." We have not seen the type. From the description it appears to be *P. virgatum* L. The name is listed earlier by Hemsley[c] without description.

Panicum cartilagineum Muhl. Descr. Gram. 128. 1817. "Habitat in Georgia." This is not in the Muhlenberg Herbarium. The description suggests *P. leucothrix* Nash.

Panicum conchatum Fourn. Mex. Pl. **2**: 25. 1886. "*Sierra de San Cristobal* (SCHAFFN. n. 204, octobri)." This name was earlier listed by Hemsley[d] without description. Specimens of this number of Shaffner's collection were examined at the herbarium of Drake de Castillo and at the Halle Herbarium, but the notes taken at the time are not full enough to enable us to describe this species, which is not represented in the National Herbarium, nor is Fournier's description at all adequate. This appears to be a distinct species of the Parviglumia and most nearly related to *P. schmitzii* Hack., from which it differs in having a longer, more oblong spikelet with a longer first glume.

Panicum cordifolium Desv. Opusc. 88 [90]. 1831. "Habitat in America boreali." We have not seen the type. The description applies well to *P. commutatum* Schult.

Panicum cordovense Fourn. Mex. Pl. **2**: 26. 1886. "*Cordova* (SCHAFFN. n. 293 in herb. FRANQ.)." The type is in the herbarium of Drake de Castillo. The notes taken upon this specimen do not enable us to identify it with any other Mexican species, hence it is retained among the doubtful species until more material can be examined. The culms and blades are minutely pubescent, the latter 8 cm. long and 12 mm. wide. The spikelets are glabrous and 3 mm. long, the first glume obtuse, 3-nerved, nearly as long as the spikelet, the second glume 5-nerved, the sterile lemma 2-nerved, the central nerve being suppressed.

---

[a] Biol. Centr. Amer. Bot. **3**: 485. 1885.

[b] Nom. Bot. ed. 2. **2**: 253. 1841.

[c] Biol. Centr. Amer. Bot. **3**: 486. 1885.

[d] Op. cit. 487.

Panicum densum Muhl. Descr. Gram. 122. 1817. No locality is given. The type is not in the Muhlenberg Herbarium. The description suggests one of the Lanuginosa.

Panicum dichotomum curvatum Torr. Fl. North. & Mid. U. S. 145. 1824. No locality is given. There is no specimen thus marked in the Torrey Herbarium. The reference to tall culms and curved branches suggests *P. yadkinense* Ashe.

Panicum dichotomum gracile Torr. Fl. North. & Mid. U. S. 145. 1824. "Common in swamps, New-York." The type is not in the Torrey Herbarium and the form can not be certainly identified, but the description, "culm tall, slender; leaves membranaceous. Common in swamps," suggests the vernal form of *P. lucidum* Ashe.

· *Panicum dichotomum spathaceum* Wood, Bot. & Flor. 393. 1874. No locality nor specimen is mentioned and the form can not be identified.

Panicum disciferum Fourn. Mex. Pl. **2**: 19. 1886. "*San Luis de Potosi* (VIRL[ET] n. 1292)." We have been unable to find the type of this. The name was mentioned earlier, without description, by Hemsley.[a] The description of the inflorescence as consisting of six appressed spikes suggest that this may not be a true Panicum.

Panicum discolor Spreng. Mant. Fl. Hal. 31. 1807. The only specimen mentioned is "E Pensylvania." We have not been able to locate the type and the species can not be identified from the description, though it belongs to the subgenus Dichanthelium.

Panicum elliottii Spreng.; Steud. Nom. Bot. ed. 2. **2**: 256. 1841, not Trin. 1829. This is given as a synonym of *P. pubescens*. As the latter name is given without an author, Sprengel's name can be fixed upon no definite species and is hence a nomen nudum. No type has been seen.

Panicum firmandum Steud. Syn. Pl. Glum. **1**: 418. 1854. "Carolina sptr." This was received from M. A. Curtis under the name of *P. microcarpon* Muhl. We have not seen the type. The description applies well to *P. sphaerocarpon* except that the spikelets are said to be glabrous while in the latter species they are finely puberulent.

Panicum flexuosum Raf.; Desv. Journ. de Bot. **4**: 273. 1814, not Retz. 1791. The description is as follows: "feuilles lancéolées, élatées, ciliees à la base; panicule pubescente; pedoncules flexueux; glume ciliee. Dans le nouveau Jersey."

Panicum gracilescens Desv.; Poir. in Lam. Encycl. Suppl. **4**: 279. 1816. "Cette plante croît à la Caroline (V. s. in herb. Desv.)." The type could not be found in the Desvaux Herbarium and the species can not be identified. Desvaux gives a later description,[b] which disagrees in some respects with that of Poiret.

Panicum hirsutum Vahl; Griseb. Fl. Brit. W. Ind. 548. 1864, not Swartz, 1797. This is mentioned as a synonym under *P. diffusum* Swartz. We have not seen the type but the specific name and the statement by Grisebach that the sheaths of *P. diffusum* may be glabrous or pilose, suggest that *P. hirsutum* Vahl may be *P. ghiesbreghtii* Fourn.

Panicum iowense Ashe, N. C. Agr. Exp. Sta. Bull. **175**: 115. 1900. "Dry prairies, eastern Iowa to Kansas, June and July." There is no specimen in Ashe's herbarium bearing this name nor that can with any degree of certainty be connected with the description. There is a specimen of *P. praecocius* collected on dry prairies at Armstrong, Iowa, July, 1890, by R. I. Cratty, which is marked in pencil by Ashe, "Panicum prairie." The description applies fairly well to this specimen except that the height is given as "1-2 cm." [error for 1 to 2 dm.?], the panicle as "small, 1-2 cm. long," and the length of the spikelets as "1.1-1.4 mm." [the spikelets are 1.8 to 1.9 mm. long]. The description is too meagre to distinguish this species from *P. huachucae* which is found in the range given, and to which the description of panicles and spikelets better applies. A specimen of *P. praecocius*, *Carver* 258, Jewell Junction, Iowa, in the Iowa Agricultural College Herbarium, is marked in Ashe's writing "Panicum haemocarpon Ashe sp. nov. affine P. villosissimum Nash." This adds to the evidence against taking the Cratty specimen as the type of *P. iowense*.

---

[a] Biol. Centr. Amer. Bot. **3**: 488. 1885.

[b] Opusc. 95. 1831.

Panicum muhlenbergianum Schult. Mant. **2**: 230. 1824. Based on "Panicum n. 27 (sine nomine) *Muhlenb. Descr. ub. p.* 118." The type is not in the Muhlenberg Herbarium, and there is no evidence that Schultes saw the plant, the description of which he copies from Muhlenberg. The latter gives the locality as "Habitat in Georgia." The description applies well to *P. barbulatum* Michx.

Panicum nitidum glabrum Torr. Fl. North. & Mid. U. S. 146. 1824. No locality is mentioned, and the type can not be found in the Torrey Herbarium. The description suggests *P. commutatum* Schult.

Panicum nitidum gracile Torr. Fl. North. & Mid. U. S. 146. 1824. The only locality mentioned is "near New-York." The type can not be found in the Torrey Herbarium. The description applies fairly well to the vernal form of *P. dichotomum* L.

Panicum nitidum major[*us*] Vasey, Contr. Nat. Herb. **3**: 30. 1892. No specimen nor locality is cited and no type can be found in the National Herbarium. Vasey says, "Here could be placed several variable forms."

Panicum ornatum Desv.; Hamilt. Prodr. Pl. Ind. Occ. 11. 1825. "Herb. Prof. Desv. Porto Rico." This is further described by Desvaux.[a] We have been unable to find the type of this species. It is doubtful if the type came from Porto Rico, as the description does not appear to apply to any of the West Indian species.

Panicum pensylvanicum Spreng. Bot. Gart. Halle, Erst. Nacht. 30. 1801. "Pensylvanien." No type nor authentic specimen of this could be found. The species can not be recognized from the description given. A later description[b] differs in several essentials and may apply to *P. anceps.* Willdenow[c] refers *P. pensylvanicum* "*Spreng. cat. hort. halens.*" to *P. rostratum* Muhl. (*P. anceps*).

Panicum portoricense Desv.; Hamilt. Prodr. Pl. Ind. Occ. 11. 1825. "Herb. Prof. Desv. Porto Rico." A further description is given later by Desvaux,[d] where the locality is given as "Antillis." We have been unable to find the type of this. The description appears to apply to a species of the subgenus Dichanthelium.

Panicum pumilum Raf. Med. Repos. N. Y. **5**: 353. 1808. This is a nomen nudum with no mention of locality nor specimens.

Panicum rafinesquianum Schult. Mant. **2**: 257. 1824. Based on *P. flexuosum* Raf.

Panicum reflexopilum Steud. Syn. Pl. Glum. 1: 84. 1854. "Oaxaca." We have not seen the type. The description applies well to *P. viscidellum* Scribn.

Panicum sessilicaule Desv.; Hamilt. Prodr. Pl. Ind. Occ. 11. 1825. This is mentioned in a note under *P. cayennense* Lam. and later described by Desvaux,[e] who gives the locality as "Habitat in Carolina?" and states that the plant is only a variety of *P. cayennense.* It probably did not come from Carolina. We have not seen the type.

Panicum speciosum Walt. Fl. Carol. 73. 1788. No special locality is given, but the general locality is the valley of the lower Santee River, South Carolina. There is no specimen of this in Walter's herbarium. It can not be identified.

Panicum striatum Muhl.; Hemsl. Biol. Centr. Amer. Bot. **3**: 492. 1885. This is given as a synonym of *P. neuranthum* Griseb. The name appears here and also later in Fournier's work,[f] from which Hemsley quotes as "Panicum striatum Muhl. not Lam." We know of no *P. striatum* of Muhlenberg.

Panicum vilfiforme Wood, Class-book. 785. 1861. "Wet meadows, E. Tenn.!" We have not been able to locate the type of this, and it can not be identified from the description. It appears to be a species of the group Agrostoidia.

Panicum virletii Fourn. Mex. Pl. **2**: 29. 1886. "*San Luis de Potosi* (VIRL. n. 1305, 1371)." This name was earlier listed without description by Hemsley.[g] Neither of the specimens cited could be found. The only description given is "Differt a *P. diffuso* gluma inferiore mediam spiculam superante." The specimens cited by Fournier under *P. diffusum* are mostly *P. ghiesbreghtii* Fourn.

---

[a] Opusc. 88 [90]. 1831.

[b] Spreng. Mant. Fl. Hal. 1: 31. 1807.

[c] Enum. Pl. 1032. 1809.

[d] Opusc. 89. 1831.

[e] Opusc. 95. 1831.

[f] Mex. Pl. **2**: 19. 1886.

[g] Biol. Centr. Amer. Bot. **3**: 498. 1885.

LIST OF NEW SUBGENERA AND SPECIES AND NEW NAMES.

	Page.
Dichanthelium Hitchc. & Chase, subgen. nov. (type *P. dichotomum* L.)	142
Lasiacis (Griseb.) Hitchc.	16
Lasiacis sect. *Panicum* Griseb.	
Lasiacis divaricata (L.) Hitchc.	16
Panicum divaricatum L.	
Panicum amarulum Hitchc. & Chase, sp. nov.	96
Panicum breve Hitchc. & Chase, sp. nov.	271
Panicum bulbosum sciaphilum (Rupr.) Hitchc. & Chase	83
Panicum sciaphilum Rupr.	
Panicum concinnius Hitchc. & Chase	263
Panicum gracilicaule Nash, 1903, not Rendle, 1899.	
Panicum cupreum Hitchc. & Chase	120
Panicum hians purpurascens Scribn., not *P. purpurascens* H. B. K.	
Panicum firmulum Hitchc. & Chase, sp. nov.	27
Panicum languidum Hitchc. & Chase	232
Panicum unciphyllum forma *prostratum* Scribn. & Merr., not *P. prostratum* Lam.	
Panicum lepidulum Hitchc. & Chase, sp. nov.	75
Panicum longum Hitchc. & Chase	111
Panicum pilosum macranthum Scribn., not *P. macranthum* Trin.	
Panicum nodatum Hitchc. & Chase, sp. nov.	293
Panicum olivaceum Hitchc. & Chase, sp. nov.	225
Panicum pacificum Hitchc. & Chase, sp. nov.	229
Panicum paludivagum Hitchc. & Chase, sp. nov.	32
Panicum pampinosum Hitchc. & Chase, sp. nov.	66
Panicum parcum Hitchc. & Chase, sp. nov.	68
Panicum plenum Hitchc. & Chase, sp. nov.	80
Panicum rhizomatum Hitchc. & Chase, sp. nov.	109
Panicum rotundum Hitchc. & Chase, sp. nov.	139
Panicum sphaerocarpon inflatum (Scribn. & Smith) Hitchc.	253
Panicum inflatum Scribn. & Smith.	
Panicum stramineum Hitchc. & Chase, sp. nov.	67
Panicum vernale Hitchc. & Chase, sp. nov.	266
Panicum xalapense strictirameum Hitchc. & Chase, subsp. nov.	161
Paurochaetium Hitchc. & Chase, subgen. nov. (type *P. distantiflorum* Rich.).	22

INDEX TO NUMBERED SPECIMENS.

The following list includes the numbered specimens distributed in the more important collections of Panicum. Two or more species when here listed under one number were distributed under this number by the collector.

Andrews, L.

8.	sphaerocarpon.
11.	clandestinum.
14.	lindheimeri.
18.	barbulatum.
20.	implicatum.
23.	verrucosum.
36.	huachucae silvicola.
40.	boscii.
44.	latifolium.
49.	linearifolium.
51.	scribnerianum.
58.	depauperatum.
62.	tsugetorum.
63.	ashei.
64.	huachucae silvicola.
66.	huachucae silvicola.
70.	huachucae.
73.	sphaerocarpon.
74.	tsugetorum.

Baker, C. F.

36.	scribnerianum.
48.	barbinode.
131.	agrostoides.
676.	barbipulvinatum.
2053.	barbinode.
2078.	parvifolium.
4334.	zizanioides.
4837.	stenodes.

Baker, C. H.

18.	condensum.
31.	verrucosum.
40.	rhizomatum.
41.	pauciciliatum.
42.	commutatum.
45.	chrysopsidifolium.
68.	polycaulon.
69.	equilaterale.
70.	pauciciliatum.
71.	pauciciliatum.
72.	pauciciliatum.
119.	albomarginatum.

Ball, C. R.

8.	anceps.
14.	boscii.
20.	agrostoides.
21.	dichotomiflorum. polyanthes.
25.	joorii.
30.	perlongum.
34.	dichotomiflorum.
39.	dichotomiflorum.
40.	latifolium.
42.	huachucae silvicola.
46.	anceps.
51.	microcarpon.
53.	lindheimeri.
60.	hians.
62.	xalapense.
64.	oligosanthes.
65.	sphaerocarpon.
66.	commutatum.
67.	dichotomiflorum.
69.	sphaerocarpon.
70.	stipitatum.
77.	scoparium.
83.	agrostoides.
111.	agrostoides.
120.	capillare.
121.	angustifolium.
122.	xalapense.
123.	hians.
124.	agrostoides.
125.	anceps.
135.	dichotomiflorum.
137.	rhizomatum.
139.	dichotomiflorum.
145.	perlongum.
149.	capillare.
155.	latifolium.
156.	agrostoides.
157.	gymnocarpon. huachucae silvicola.
164.	dichotomiflorum.

Ball, C. R.—Continued.
166. anceps.
169. agrostoides.
178. scribnerianum.
190. hians.
192. virgatum.
202. lucidum.
204. verrucosum.
215. dichotomiflorum.
220. brachyanthum.
225. agrostoides.
228. anceps.
229. dichotomiflorum.
441. sphaerocarpon inflatum.
535. hians.
536. sphaerocarpon inflatum.
544. lanuginosum.
625. commutatum.
702. clandestinum.
703. boscii molle.
704. microcarpon.
705. polyanthes.
720. capillare.
791. equilaterale.
792. lancearium.
816. tennesseense.
817. implicatum.
966. capillare.
1139. obtusum.

Bartlett, H. H.
807. spretum.
844. microcarpon.
903. anceps.
1024. philadelphicum.
1066. agrostoides.
1071. polyanthes.
1081. microcarpon.
1103. verrucosum.
1136. lucidum.
1170. scoparium.
1172. auburne.
1173. nitidum.
1327. oricola.
1368. oricola.
1379. oricola.
1414. villosissimum.
1443. lanuginosum.
1444. aciculare.
1453. xalapense.
1455. aciculare.
1456. nitidum.
1457. microcarpon.
1458. ashei.

Bartlett, H. H.—Continued.
1459. sphaerocarpon.
1460. lanuginosum.
1461. concinnius.
1462. angustifolium.
1497. villosissimum.
1498. polyanthes.
1500. polyanthes.
1501. joorii.
1502. ravenelii.
1504. ashei.
1505. boscii.
1508. mutabile.

Bebb, R.
513. depauperatum.
514. pseudopubescens.
520. huachucae.
882. latifolium.
1236. xalapense.
1242. commutatum.
1245. oligosanthes.
1259. sphaerocarpon.
1262. angustifolium.
1276. lindheimeri.
1278. helleri.
1299. capillare.
1321. reverchoni.
1426. oligosanthes.
1428. lindheimeri.
1430. helleri.
1434. sphaerocarpon.
1457. xalapense.
1459. scribnerianum.
2057. praecocius.
2167. scribnerianum.
2661. villosissimum.
2663. depauperatum.
2670. malacophyllum.
2703. oligosanthes.
2715. scribnerianum.
2815. meridionale.
2832. subvillosum.
2833. villosissimum.
2833½. subvillosum.
2834. villosissimum.
2881. tennesseense.
2882. pseudopubescens.
2917. capillare.
2928. flexile.
2935. boreale.
2936. meridionale.
2939½. tsugetorum.
2947. meridionale.

Biltmore Herbarium.

696a.	anceps.
697a.	trifolium.
698b.	tennesseense.
700a.	virgatum.
700b.	virgatum.
700c.	virgatum.
700e.	virgatum cubense.
702a.	dichotomiflorum.
797.	depauperatum.
797a.	depauperatum.
797c.	depauperatum.
800a.	barbulatum. dichotomum.
800b.	lucidum.
800c.	dichotomum.
802a.	commutatum.
802b.	commutatum.
803a.	microcarpon.
804.	clandestinum.
804b.	clandestinum.
808a.	stipitatum.
2984a.	commutatum.
2993a.	xalapense.
2993c.	xalapense.
2994a.	ravenelii.
3627.	longifolium.
4278.	angustifolium.
4290.	scoparium.
4290a.	scoparium.
4292b.	sphaerocarpon.
5066b.	lucidum.
5066e.	sphagnicola.
5184b.	tennesseense.
5185a.	boscii molle.
5185b.	boscii molle.
5839b.	anceps.
6022a.	polycaulon.
6028.	spretum in part.
6204a.	webberianum.
7079a.	linearifolium.
7080a.	wrightianum.
8342.	werneri.
9953c.	albemarlense.
9959f.	boscii molle.
10715b.	curtifolium.
11866.	aciculare.
14879b.	huachucae silvicola.

Bissell, C. H.

385.	scoparioides.
5529.	agrostoides.
5533.	depauperatum.
5541.	linearifolium.
5542.	linearifolium.
5544.	clandestinum.
5546.	clandestinum.
5548.	latifolium.
5549.	latifolium.
5550.	latifolium.
5551.	boscii molle.
5552.	boscii.
5563.	scribnerianum.
5566.	microcarpon.
5569.	microcarpon.
5570.	microcarpon.
5571.	microcarpon.
5577.	barbulatum.
5580.	ashei.
5581.	scoparioides.
5582.	boreale.
5583.	lindheimeri.
5585.	sphaerocarpon.
5590.	implicatum.
5594.	tsugetorum.
5595.	tsugetorum.
5596.	columbianum.
5611.	tennesseense.
5616.	tsugetorum.
5622.	implicatum.
8084.	scoparioides.
9306.	oricola.
11596.	longifolium.
12000.	commonsianum.
12001.	subvillosum.
12002.	implicatum.

Botteri, M.

99.	olivaceum.
101.	olivaceum.
160.	plenum.
648.	virgatum.
688.	laxum.
705.	viscidellum.
1987.	olivaceum.

Bourgeau, E.

235.	bulbosum.
529.	elephantipes.
1455.	pulchellum.
1662.	polygonatum in part.
2162.	xalapense.
2383.	multirameum. olivaceum.
2751.	ghiesbreghtii.
2794.	bulbosum.
3132.	viscidellum.
3192.	glutinosum.

Brace, L. J. K.
3467. bartowense.
3524. caerulescens.
3697. nitidum.
3742. dichotomiflorum.
4158. exiguiflorum.
4164. exiguiflorum.
4380. exiguiflorum.
7015. caerulescens.
7019. tenerum.
7132. tenerum.

Broadway, W. E.
2370. stoloniferum.
2371. frondescens.
2372. parvifolium.
2563. zizanioides.
2629. hirsutum.

Burchell, W. J.
A101-2. rotundum.
4146. millegrana.
4315-2. millegrana.
4653. millegrana.
7062. trichanthum.
8350. cayennense.
8706. trichoides.
8791. trichanthum.

Bush, B. F.
8. latifolium.
9. agrostoides.
10. dichotomiflorum.
14. villosissimum.
17. ashei.
26. boscii.
51. barbulatum.
54. praecocius.
87. praecocius.
91. latifolium.
120. hians.
141. villosissimum.
145. sphaerocarpon.
148. barbulatum.
153. linearifolium.
177. sphaerocarpon.
178. lindheimeri.
190. latifolium.
232. polyanthes.
234. commutatum.
238. commutatum.
251. huachucae silvicola.
255. polyanthes.
263. malacophyllum.
266. reptans.
270. fasciculatum chartaginense.

Bush, B. F.—Continued.
276. boscii.
287. commutatum.
289. ashei.
302. agrostoides.
303. boscii.
308. commutatum.
309. huachucae silvicola.
310. boscii.
312. ashei.
313. barbulatum.
320. linearifolium.
322. commutatum.
323. boscii.
333. villosissimum.
379. leibergii.
384. flexile.
413. bicknellii.
642. malacophyllum.
651. xalapense.
674. reverchoni.
675. sphaerocarpon.
705. helleri.
    virgatum.
707. hians.
708. hians.
709. hians.
711. tennesseense.
712. tennesseense.
718. clandestinum.
720. barbulatum.
722. scribnerianum.
729. scribnerianum.
730. leibergii.
731. commutatum.
    linearifolium.
732. villosissimum.
733. clandestinum.
    scribnerianum.
734. huachucae silvicola.
737. scribnerianum.
738. brachyanthum.
740. scribnerianum.
742. linearifolium.
744. leibergii.
746. huachucae silvicola.
747. microcarpon.
    sphaerocarpon inflatum.
748. commutatum.
    praecocius.
749. praecocius.
    xalapense.
750. villosissimum.
753. sphaerocarpon inflatum.

Bush, B. F.—Continued.

754.	boscii molle.
755.	commutatum.
759.	huachucae silvicola.
760.	huachucae silvicola.
803.	helleri.
848.	flexile.
906.	flexile.
979.	brachyanthum.
1023.	agrostoides.
1107.	linearifolium.
1156.	filipes.
1157.	fasciculatum chartaginense.
1198.	texanum.
1210.	huachucae silvicola.
1216.	scribnerianum.
1218.	sphaerocarpon.
1220.	villosissimum.
1222.	scribnerianum.
1224.	commutatum.
1225.	oligosanthes.
1273.	xalapense.
1296.	reptans.
1298.	anceps.
1388.	aciculare.
1398.	agrostoides.
1440.	xalapense.
1450.	commutatum.
1498.	gymnocarpon.
1555.	linearifolium.
1652.	leibergii.
1659.	scribnerianum.
1684.	leibergii.
1685.	helleri.
1710.	helleri.
1713.	huachucae silvicola.
1732.	latifolium.
1832.	obtusum.
2332.	huachucae.
2350.	depauperatum.
2488.	xalapense.
2522.	arenicoloides.
2526.	ravenelii.
2529.	helleri.
2532.	barbulatum.
2736.	commutatum.
2760.	leibergii.
2877.	barbulatum.
2881a.	linearifolium.
2911.	ashei.
2913.	werneri.
2926.	werneri.

Bush, B. F.—Continued.

2996.	huachucae silvicola.
3089.	perlongum.
3090.	praecocius.
3107.	obtusum.
3246.	bicknellii.
3295.	flexile.
3318.	capillare.
3369.	barbulatum.
3456.	ashei.
3456a.	barbulatum.
3529.	barbulatum.
3658.	stipitatum.
3893.	helleri.
3903.	helleri.
3914.	tennesseense.
3915.	huachucae silvicola.
3933.	scribnerianum.
3935.	praecocius.
3936.	depauperatum.
3968.	huachucae silvicola.
3977.	clandestinum.
3981.	latifolium.
4001.	latifolium.
4002.	huachucae silvicola.
4003.	clandestinum.
4021.	scribnerianum.
4024.	huachucae silvicola.
4038.	virgatum.
4411.	linearifolium.
4411a.	linearifolium.
4412.	ashei.
4458.	barbulatum.
4473.	barbulatum.
4487.	ashei.
4532.	tennesseense.
4533.	linearifolium.
4534.	boscii.
4549.	linearifolium.
4568.	scribnerianum.
4638.	xalapense.
4651.	clandestinum.
4652.	boscii.
4653.	scribnerianum.
4654.	depauperatum.
4684.	tennesseense.
4685.	commutatum.
4712.	ashei.
4714.	ashei.
4733.	barbulatum.
4734.	linearifolium.
4788.	villosissimum.
4803.	huachucae silvicola.

Bush, B. F.—Continued.

4807. latifolium.
4824. gattingeri.
4865. clandestinum.
4908. boscii.
5023. villosissimum.
5060. boscii molle.
5105. virgatum.
5114. anceps.
5115. agrostoides.
5116. gattingeri.
5119. philadelphicum.
5120. philadelphicum.
5203. philadelphicum.
5234. agrostoides.
5259. flexile.

Chamberlain, E. B.

298. depauperatum.
336. boreale.
513. huachucae silvicola.
552. virgatum.
787. subvillosum.
793. boreale.
837. subvillosum.

Chase, A.

867. depauperatum.
889. latifolium.
918. verrucosum.
1178. virgatum.
1472. meridionale.
1474. flexile.
1479. flexile.
1480. capillare.
1540. depauperatum.
1541. latifolium.
1542. pseudopubescens.
1543. dichotomum.
1544. tsugetorum.
1545. villosissimum.
1546. implicatum.
1552. tsugetorum.
1563. villosissimum.
1602. tsugetorum.
1604. tsugetorum.
1605. pseudopubescens.
1605½. tsugetorum.
1606. villosissimum.
1607. scribnerianum.
1633. miliaceum.
1636. virgatum.
1729. flexile.
1824. latifolium.
1850. sphaerocarpon.
1887. latifolium.

Chase, A.—Continued.

1904. tennesseense.
1919. dichotomum.
1921. tsugetorum.
1947. latifolium.
2006. flexile.
2008. capillare.
2284. depauperatum.
2303. linearifolium.
2315. dichotomum.
2316. xalapense.
2320. xalapense.
2332. sphaerocarpon.
2333. spretum.
2339. albemarlense.
2341. auburne.
2345. lancearium.
2349. commonsianum.
2357. aciculare.
2366. clandestinum.
2367. microcarpon.
2368. polyanthes.
2370. microcarpon.
2374. boscii.
2378. villosissimum.
2379. dichotomum.
2381. commutatum.
2400. huachucae silvicola.
2401. sphaerocarpon.
2402. depauperatum.
2412. sphaerocarpon.
2428. meridionale.
2463. tennesseense.
2477. ashei.
2477½. bicknellii.
2520. aculeatum.
2528. virgatum.
2585. anceps.
2599. philadelphicum.
2628. gattingeri.
2673. condensum.
2679. stipitatum.
2830. ashei.
2849. tennesseense.
2853. yadkinense.
2864. depauperatum.
2865. scribnerianum.
2874. tennesseense.
2887. lindheimeri.
2905. villosissimum.
2912. oligosanthes.
2936. aciculare.
2946. yadkinense.
2947. annulum.

Chase, A.—Continued.

2964.	yadkinense.
2985.	lindheimeri.
2996.	anceps.
3047.	lindheimeri.
3048.	dichotomum.
3049.	huachucae silvicola.
3051.	ashei.
3052.	commutatum.
3053.	depauperatum.
3054.	boscii molle.
3055.	villosissimum.
3056.	villosissimum.
3056½.	dichotomum.
3057.	xalapense.
3058.	villosissimum.
3059.	yadkinense.
3060.	trifolium.
3061.	yadkinense.
3061½.	microcarpon.
3062.	huachucae silvicola.
3063.	angustifolium.
3064.	ashei.
3065.	huachucae silvicola.
3067.	huachucae silvicola.
3068.	lanuginosum.
3069.	huachucae silvicola.
3071.	villosissimum.
3072.	yadkinense.
3073.	boscii.
3074.	sphaerocarpon.
3075.	villosissimum.
3076.	lanuginosum.
3078.	clandestinum.
3081.	villosissimum.
3082.	angustifolium.
3082½.	arenicoloides.
3084.	aciculare.
3086.	lanuginosum.
3087.	angustifolium.
3088.	ravenelii.
3089.	sphaerocarpon.
3090.	barbulatum.
3092.	bicknellii.
3093.	spretum.
3094.	aciculare.
3095.	consanguineum.
3096.	wrightianum.
3096½.	ensifolium.
3097.	ensifolium.
3097½.	aciculare.
3098.	hians.
3099.	mattamuskeetense.
3100.	meridionale.

Chase, A.—Continued.

3100½.	albermarlense.
3101.	scabriusculum.
3103.	aciculare.
3105.	aciculare.
3106.	albemarlense.
3107.	lanuginosum.
3108.	lindheimeri.
3109.	pseudopubescens.
3110.	patulum.
3111.	xalapense.
3112.	lucidum.
3113.	lancearium.
3114.	commutatum.
3115.	pseudopubescens.
3117.	xalapense.
3118.	xalapense.
3120.	arenicoloides.
3121.	villosissimum.
3123.	aciculare.
3125.	chamaelonche.
3126.	pauciciliatum.
3127.	pauciciliatum.
3128.	pauciciliatum.
3129.	lancearium.
3130.	aciculare.
3131.	ciliatum.
3132.	auburne.
3133.	trifolium.
3134.	sphaerocarpon inflatum.
3135.	wrightianum.
3136.	longiligulatum.
3137.	erectifolium.
3138.	angustifolium.
3139.	pauciciliatum.
3141.	villosissimum.
3143.	arenicoloides.
3144.	virgatum cubense.
3145.	longiligulatum.
3147.	pseudopubescens.
3150.	longiligulatum.
3154.	mutabile.
3155.	villosissimum.
3156.	arenicoloides.
3157.	aciculare.
3158.	sphaerocarpon inflatum.
3159.	lucidum.
3160.	pseudopubescens.
3161.	commonsianum.
3162.	pauciciliatum.
3163.	angustifolium.
3166.	addisonii.
3167.	aciculare.

CHASE, A.—Continued.
3168. commutatum.
3169. angustifolium.
3170. tenue.
3171. strigosum.
3172. tenue.
3174. consanguineum.
3175. longiligulatum.
3176. ensifolium.
3177. ensifolium.
3178. roanokense.
3179. longiligulatum.
3181. lancearium.
3182. chamaelonche.
3183. tenue.
3184. ciliatum.
3185. aciculare.
3187. microcarpon.
3188. barbulatum.
3189. mutabile.
3190. microcarpon.
3191. villosissimum.
3192. yadkinense.
3193. lancearium.
3194. lancearium.
3195. wilmingtonense.
3196. ensifolium.
3197. lucidum.
3198. lindheimeri.
3199. trifolium.
3200. nitidum.
3201. albemarlense.
3201½. lanuginosum.
3203. roanokense.
3204. microcarpon.
3205. aciculare.
3206. sphaerocarpon.
3208. lanuginosum.
3210. aculeatum.
3210½. microcarpon.
3211. lancearium.
3212. sphaerocarpon.
3213. longiligulatum.
3214. ciliatum.
3215. aciculare.
3216. aciculare.
3217. aciculare.
3218. pseudopubescens.
3220. ashei.
3221. lanuginosum.
3222. pseudopubescens.
3224. lancearium.
3225. trifolium.
3226. ciliatum.

CHASE, A.—Continued.
3227. ensifolium.
3228. longifolium.
3230. consanguineum.
3232. mattamuskeetense.
3233. longiligulatum.
3234. ensifolium.
3235. scabriusculum.
3237. sphaerocarpon.
3238. trifolium.
3239. trifolium.
3240. roanokense.
3242. clutei.
3244. strigosum.
3246. pauciciliatum.
3247. roanokense.
3248. trifolium.
3249. angustifolium.
3250. angustifolium.
3253. microcarpon.
3254. huachucae silvicola.
3255. lindheimeri.
3256. sphaerocarpon.
3259. lindheimeri.
3260. tennesseense.
3262. microcarpon.
3269. tsugetorum.
3270. tsugetorum.
3272. clandestinum.
3273. polyanthes.
3274. tennesseense.
3275. tennesseense.
3277. boreale.
3278. subvillosum.
3283. depauperatum.
3295. xanthophysum.
3299. werneri.
3300. xanthophysum.
3301. tennesseense.
3316. depauperatum.
3320. subvillosum.
3321. tsugetorum.
3326. linearifolium.
3355. boreale.
3363. tsugetorum.
3367. latifolium.
3379. depauperatum.
3382. werneri.
3390. tsugetorum.
3391. subvillosum.
3392. implicatum.
3393. linearifolium.
3399. tennesseense.
3399½. tsugetorum.

Chase, A.—Continued.

3436.	implicatum.
3437.	boreale.
3443.	boreale.
3453.	subvillosum.
3454.	implicatum.
3457.	tennesseense.
3458.	boreale.
3459.	implicatum.
3464.	lindheimeri.
3466.	meridionale.
3469.	agrostoides.
3473½.	lindheimeri.
3475.	lucidum.
3484.	barbulatum.
3486.	scoparium.
3488.	lanuginosum.
3489.	sphaerocarpon.
3502.	ashei.
3503.	tennesseense.
3505.	lanuginosum.
3508.	huachucae silvicola.
3509.	sphaerocarpon.
3513.	clandestinum.
3516.	microcarpon.
3517.	addisonii.
3517½.	commonsianum.
3519.	columbianum.
3520.	pseudopubescens.
3521.	ashei.
3522.	villosissimum.
3523.	addisonii.
3524.	tsugetorum.
3528.	lindheimeri.
3529.	agrostoides.
3530.	longifolium.
3531.	commonsianum.
3532.	tsugetorum.
3533.	columbianum.
3534.	columbianum thinium.
3534½.	meridionale.
3535.	ensifolium.
3536.	leucothrix.
3538.	addisonii.
3539.	columbianum.
3541.	commonsianum.
3542.	ashei.
3543.	tsugetorum.
3544.	commonsianum.
3545.	clutei.
3546.	verrucosum.
3550.	lucidum.
3551.	spretum.
3553.	clutei.

Chase, A.—Continued.

3554.	lucidum.
3556.	leucothrix.
3557.	ensifolium.
3559.	columbianum thinium.
3560.	columbianum thinium.
3562.	oricola.
3564.	tsugetorum.
3566.	pseudopubescens.
3569.	spretum.
3570.	commonsianum.
3572.	lindheimeri.
3573.	virgatum cubense.
3574.	addisonii.
3575.	commonsianum.
3576.	oricola.
3577.	columbianum thinium.
3578.	leucothrix.
3579.	tsugetorum.
3580.	huachucae silvicola.
3581.	oricola.
3583.	addisonii.
3584.	commonsianum.
3588.	columbianum thinium.
3589.	lindheimeri.
3590.	clutei.
3593.	lucidum.
3595.	addisonii.
3596.	commonsianum.
3598.	clutei.
3599.	lucidum.
3600.	scoparium.
3601.	tsugetorum.
3601½.	ashei.
3603.	addisonii.
3605.	columbianum thinium.
3606.	columbianum.
3608.	tsugetorum.
3609.	oricola.
3611.	sphaerocarpon.
3612.	tsugetorum.
3613.	columbianum.
3616.	yadkinense.
3617.	tennesseense.
3618.	scribnerianum
3620.	barbulatum.
3621.	commutatum.
3623.	virgatum.
3631.	anceps.
3642.	tsugetorum.
3643.	barbulatum.
3653.	villosissimum.
3654.	commutatum.
3656.	lancearium.

CHASE, A.—Continued.
3657. dichotomum.
3658. albomarginatum.
3660. verrucosum.
3662. longifolium.
3663. lanuginosum.
3668. microcarpon.
3674. patulum.
3675. villosissimum.
3676. virgatum.
3677. angustifolium.
3678. commutatum.
3679. ashei.
3680. auburne.
3682. aciculare.
3683. meridionale.
3686. lindheimeri.
3687. philadelphicum.
3704. ashei.
3708. annulum.
3729. lindheimeri.
3739. ensifolium.
3743. lucidum.
3744. mattamuskeetense.
3744½. mattamuskeetense.
3745. albemarlense.
3747. barbulatum.
3752. tsugetorum.
3757. albemarlense.
3758. barbulatum.
3762. albemarlense.
3762½. villosissimum.
3767. microcarpon.
3772. yadkinense.
3780. ravenelii.
3783. bicknellii.
3787. ashei.
3791. mattamuskeetense.
3793. mattamuskeetense.
3794. columbianum.
3796. ravenelii.
3803. polyanthes.
3806. columbianum thinium.
3808. scribnerianum.
3809. annulum.
3825. albemarlense.
3826. mattamuskeetense.
3829. mattamuskeetense.
3831. microcarpon.
3832. columbianum.
3850. bartowense.
3851. adspersum.
3855. fusiforme.
3859. virgatum cubense.

CHASE, A.—Continued.
3860. virgatum cubense.
3866. ovale.
3885. polycaulon.
3889. hians.
3899. amarulum.
3900. virgatum.
3907. joorii.
3908. equilaterale.
3915. amarulum.
3926. chapmani.
3935. amarulum.
3946. trifolium.
3947. ovale.
3948. joorii.
3953. amarulum.
3964. webberianum.
3965. chamaelonche.
3966. albomarginatum.
3967. polycaulon.
3970. lancearium.
3984. rhizomatum.
3986. verrucosum.
3990. nitidum.
3991. fusiforme.
3992. caerulescens.
4004. lancearium.
4005. nitidum.
4007. bartowense.
4009. xalapense.
4014. condensum.
4015. lancearium.
4017. nitidum.
4019. joorii.
4021. fusiforme.
4023. laxiflorum.
4026. patulum.
4028. patentifolium.
4029. patentifolium.
4032. chamaelonche.
4036. chamaelonche.
4037. chamaelonche.
4039. sphagnicola.
4043. albomarginatum.
4045. pauciciliatum.
4050. patulum.
4051. patentifolium.
4051½. webberianum.
4053. chamaelonche.
4058. patentifolium.
4059. flavovirens.
4062. patulum.
4063. equilaterale.
4066. verrucosum.

Chase, A.—Continued.

4068.	lucidum.
4072.	malacon.
4077.	malacon.
4086.	patulum.
4088.	patentifolium.
4091.	nitidum.
4094.	joorii.
4095.	anceps.
4099.	joorii.
4100.	dichotomum.
4101.	laxiflorum.
4104.	polycaulon.
4105.	fusiforme.
4112.	trifolium.
4113.	lanuginosum.
4118.	ovale.
4119.	fusiforme.
4121.	hemitomon.
4122.	equilaterale.
4126.	joorii.
4132.	nitidum.
4141.	longiligulatum.
4149.	lancearium.
4151.	albomarginatum
4153.	chamaelonche.
4154.	erectifolium.
4156.	chamaelonche.
4161.	arenicoloides.
4163.	webberianum.
4163½.	patentifolium.
4166.	trifolium.
4170.	patentifolium.
4171.	chamaelonche.
4172.	longiligulatum.
4173.	pauciciliatum.
4174.	ovale.
4175.	lancearium.
4179.	fusiforme.
4181.	joorii.
4183.	patulum.
4187.	tenerum.
4188.	longiligulatum.
4191.	rhizomatum.
4194.	fusiforme.
4201.	anceps.
4201½.	rhizomatum.
4202.	verrucosum.
4205.	commutatum.
4207.	oligosanthes.
4208.	boscii molle.
4209.	patulum.
4211.	arenicoloides.
4217.	laxiflorum.

Chase, A.—Continued.

4219.	joorii.
4220.	rhizomatum.
4225.	longifolium.
4229.	angustifolium.
4234.	dichotomiflorum.
4239.	lancearium.
4241.	equilaterale.
4242.	lanuginosum.
4245.	patentifolium.
4248.	fusiforme.
4249.	arenicoloides.
4250.	ovale.
4251.	malacon.
4256.	joorii.
4258.	equilaterale.
4260.	oligosanthes.
4261.	ovale.
4267.	angustifolium.
4271.	rhizomatum.
4274.	joorii.
4276.	oligosanthes.
4277.	lanuginosum.
4279.	ravenelii.
4281.	arenicoloides.
4282.	patulum.
4283.	oligosanthes.
4284.	anceps.
4286.	agrostoides.
4287.	agrostoides.
4290.	mutabile.
4291.	arenicoloides.
4292.	lanuginosum.
4297.	angustifolium.
4299.	consanguineum.
4301.	angustifolium.
4302.	aciculare.
4304.	trifolium.
4305.	lanuginosum.
4307.	nitidum.
4308.	longiligulatum.
4310.	flavovirens.
4312.	patulum.
4314.	verrucosum
4318.	longifolium
4320.	lucidum.
4321.	nitidum.
4322.	flavovirens.
4331.	lanuginosum.
4340.	arenicoloides.
4346.	longifolium.
4351.	consanguineum.
4357.	patulum.
4358.	trifolium.

CHASE, A.—Continued.

4359. aciculare.
4360. ciliatum.
4364. polycaulon.
4366. longiligulatum.
4371. patulum.
4377. repens.
4389. brachyanthum.
4392. dichotomiflorum.
4393. anceps.
4397. agrostoides.
4400. lindheimeri.
4401. lanuginosum.
4405. chrysopsidifolium.
4407. gymnocarpon.
4410. agrostoides.
4423. arenicoloides.
4424. verrucosum.
4426. microcarpon.
4429. sphaerocarpon inflatum.
4430. oorii.
4434. combsii.
4437. joorii.
4444. aciculare.
4445. agrostoides.
4449. lindheimeri.
4453. flexile.
4459. virgatum.
4460. virgatum.
4461. capillare.
4463. clandestinum.
4464. anceps.
4468. joorii.
4469. barbulatum.
4470. sphaerocarpon.
4472. villosissimum.
4473. ashei.
4475. concinnius.
4476. concinnius.
4477. tennesseense.
4478. meridionale.
4479. angustifolium.
4482. microcarpon.
4483. concinnius.
4485. polyanthes.
4491. boscii.
4492. flexile.
4495. capillare.
4497. stipitatum.
4498. ashei.
4499. tennesseense.
4501. boscii.
4502. barbulatum.
4504. commutatum.

CHASE, A.—Continued.

4506. xalapense.
4517. xalapense.
4519. barbulatum.
4525. aciculare.
4527. condensum.
4532. lanuginosum.
4536. lancearium.
4537. equilaterale.
4538. patulum.
4542. lancearium.
4543. lancearium.
4544. commonsianum.
4545. lancearium.
4549. equilaterale.
4550. joorii.
4554. anceps.
4555. amarum.
4560. rhizomatum.
4564. longifolium.
4567. pauciciliatum.
4568. lancearium.
4569. lancearium.
4569½. webberianum.
4570. chamaelonche.
4576. trifolium.
4577. patulum.
4578. aciculare.
4579. auburne.
4580. addisonii.
4581. arenicoloides.
4583. ciliatum.
4584. lanuginosum.
4585. angustifolium.
4586. aciculare.
4589. ovale.
4591. sphaerocarpon.
4600. scabriusculum.
4601. commonsianum.
4746. barbipulvinatum.
4886. barbipulvinatum.
5251. barbipulvinatum.
5252. thermale.
5253. barbipulvinatum.
5292. barbipulvinatum.
5307. barbipulvinatum.
5345. barbipulvinatum.
5406. obtusum.
5411. linearifolium.
5412. xalapense.
5413. aciculare.
5414. aciculare.
5415. angustifolium.
5416. bicknelli.

Chase, A.—Continued.

5417.	caerulescens.
5418.	lucidum.
5419.	microcarpon.
5420.	annulum.
5421.	spretum.
5422.	lindheimeri.
5423.	lindheimeri.
5424.	tennesseense.
5425.	tennesseense.
5426.	lanuginosum.
5427.	columbianum.
5428.	commonsianum.
5429.	columbianum.
5430.	columbianum.
5431.	oricola.
5432.	sphaerocarpon.
5433.	sphaerocarpon.
5434.	patulum.
5435.	oligosanthes.
5436.	commutatum.
5437.	mutabile.
5438.	scoparium.
5439.	aculeatum.
5440.	verrucosum.
5441.	philadelphicum.
5442.	capillare.
5443.	gattingeri.
5444.	flexile.
5445.	anceps.
5519.	urvilleanum.
5766.	urvilleanum.

Chase, V. H.

73.	virgatum.
81.	huachucae silvicola.
124.	gattingeri.
125.	capillare.
183.	capillare.
242.	sphaerocarpon.
291.	pseudopubescens.
460.	perlongum.
461.	leibergii.
472.	praecocius.
649.	praecocius.
774.	capillare.
783.	gattingeri.
818.	virgatum.
922.	scribnerianum.
1158.	perlongum.
1212.	praecocius.
1214.	praecocius.
1218.	praecocius.
1455.	leibergii.
1489.	boscii.

Chase, V. H.—Continued.

1492.	praecocius.
1515.	praecocius.
1701.	leibergii.
1731.	perlongum.
1749.	scribnerianum.
1791.	praecocius.
1792.	scribnerianum.
1850.	praecocius.
1851.	huachucae silvicola.
1858.	huachucae.

Cheney, L. S.

678.	subvillosum.
1082.	subvillosum.
1107.	huachucae.
1216.	depauperatum.
1345.	werneri.
1346.	xanthophysum.
1545.	latifolium.
1700.	boreale.
2100.	boreale.
2911.	philadelphicum.
3088.	boreale.
3409.	tennesseense.
3426.	xanthophysum.
3471.	tennesseense.
3868.	virgatum.
3872.	lindheimeri.
4104.	huachucae.
4786.	xanthophysum.
5638.	huachucae.

Cocks, R. S.

286.	leucothrix.
292.	erectifolium.
422.	longiligulatum.
2186.	repens.
2191.	lanuginosum.
2193.	lanuginosum.
2194.	aciculare.
3001.	anceps.
3007.	sphaerocarpon inflatum.
3008.	stipitatum.
3322.	arenicoloides.
3324.	scoparium.
3506.	auburne.
3508.	lindheimeri.
3509.	huachucae silvicola.
3510.	xalapense strictirameum.
3511.	xalapense strictirameum.

Combs, R.

3.	patulum.
6.	leucothrix.
8.	virgatum.
14.	virgatum.

Combs, R.—Continued.

26.	hians.
34.	flavovirens.
57.	ciliatum.
58.	erectifolium.
60.	roanokense.
61.	tenerum.
63.	virgatum.
66.	virgatum.
67.	scabriusculum.
69.	hemitomon.
73.	sphagnicola.
74.	ensifolium.
75.	lancearium.
87.	hemitomon.
89.	commutatum.
94.	dichotomiflorum.
98.	flavovirens in part.
100.	ciliatum.
104.	lancearium.
112.	albomarginatum.
114.	erectifolium.
115.	longiligulatum.
117.	hians.
119.	virgatum.
120.	rhizomatum.
125.	hians.
127.	chamaelonche.
132.	patulum in part.
136.	fusiforme.
137.	ciliatum.
138.	ovale.
139.	commutatum.
141.	xalapense.
144.	joorii.
145.	ovale.
156.	commutatum.
164.	arenicoloides.
167.	malacon.
172.	hians.
173.	microcarpon.
174.	lanuginosum.
182.	sphaerocarpon inflatum.
183.	aciculare.
187.	hians.
192.	rhizomatum.
194.	lanuginosum.
206.	hemitomon.
215.	lanuginosum.
216.	aciculare.
224.	mutabile.
225.	ovale.
231.	fusiforme.
235.	virgatum.

Combs, R.—Continued.

238.	lancearium.
251.	commutatum.
255.	microcarpon.
256.	microcarpon.
259.	rhizomatum.
262.	hians.
263.	trifolium.
266.	nitidum.
267.	virgatum.
270.	joorii.
282.	anceps.
287.	hemitomon.
288.	ciliatum.
290.	wrightianum.
294.	lanuginosum.
295.	boscii molle.
298.	fusiforme.
299.	mutabile.
300.	arenicoloides.
301.	aciculare.
305.	ravenelii.
306.	sphaerocarpon.
307.	mutabile.
320.	anceps.
327.	laxiflorum.
329.	aciculare.
330.	commutatum.
334.	boscii.
337.	boscii.
347.	wrightianum.
348.	virgatum.
354.	wrightianum.
372.	aciculare.
373.	joorii.
374.	angustifolium.
376.	angustifolium.
380.	aciculare.
381.	anceps.
382.	oligosanthes.
390.	xalapense.
391.	microcarpon.
399.	boscii.
403.	sphaerocarpon inflatum.
406.	sphaerocarpon inflatum.
408.	aciculare
412.	joorii.
415.	anceps.
427.	hians.
434.	hians.
437.	virgatum.
440.	auburne.
441.	wrightianum.
443.	hemitomon.

Combs, R.—Continued.

444.	cryptanthum.
456.	fusiforme.
458.	virgatum.
467.	erectifolium.
470.	anceps.
473.	virgatum.
475.	virgatum.
476.	tenerum.
477.	wrightianum.
487.	tenerum.
488.	longiligulatum.
496.	rhizomatum.
516.	fusiforme.
524.	wrightianum.
525.	curtifolium.
526.	hians.
530.	tenerum.
537.	virgatum.
539.	flavovirens.
551.	leucothrix.
552.	wrightianum.
553.	erectifolium.
554.	aciculare.
560.	anceps.
567.	strigosum.
567a.	aciculare.
569.	longiligulatum.
570.	consanguineum.
571.	longifolium.
572.	leucothrix.
574.	tenerum.
576.	longifolium.
579.	virgatum.
583.	combsii.
584.	strigosum.
585.	flavovirens.
586.	anceps.
587.	hians.
589.	commutatum.
597.	virgatum.
601.	commutatum.
602.	ravenelii in part.
613.	villosissimum.
615.	lucidum.
616.	scabriusculum.
617.	leucothrix.
619.	tenerum.
633.	rhizomatum.
644.	longifolium.
645.	virgatum.
646.	virgatum.
647.	virgatum.
648.	rhizomatum.

Combs, R.—Continued.

649.	polycaulon in part.
650.	albomarginatum.
651.	consanguineum.
652.	longiligulatum.
653.	mutabile.
654.	virgatum.
662.	erectifolium.
664.	wrightianum.
665.	capillare.
672.	leucothrix.
673.	leucothrix.
680.	hemitomon.
683.	boscii.
686.	lancearium.
687.	dichotomum. lucidum.
695.	virgatum.
700.	rhizomatum.
703.	virgatum.
711.	hemitomon.
712.	hians.
717.	anceps.
722.	virgatum.
731.	fusiforme.
732.	lanuginosum.
737.	equilaterale.
738.	boscii molle.
740.	mutabile.
742.	oligosanthes.
743.	laxiflorum.
744.	lancearium.
751.	huachucae silvicola.
752.	lancearium.
760.	paludivagum.
774.	virgatum cubense.
777.	patentifolium.
778.	patentifolium.
780.	glabrifolium.
783.	patulum.
793.	equilaterale.
803.	caerulescens.
804.	agrostoides.
814.	erectifolium.
820.	rhizomatum.
831.	hians.
832.	hemitomon.
835.	patulum.
836.	hemitomon.
838.	sphagnicola.
853.	fusiforme.
854.	albomarginatum.
855.	malacon.
858.	patulum.

COMBS, R.—Continued.

859.	patulum.
860.	joorii.
878.	anceps.
879.	agrostoides.
884.	rhizomatum.
886.	commutatum.
887.	virgatum.
888.	ovale.
899.	fusiforme.
909.	laxiflorum.
915.	agrostoides.
919.	rhizomatum.
921.	joorii.
926.	commutatum.
926½.	equilaterale.
930.	virgatum cubense.
934.	lucidum.
935.	anceps.
957.	condensum.
960.	hemitomon.
961.	agrostoides.
964½.	condensum.
971.	bartowense.
972.	anceps.
973.	condensum.
979.	nitidum.
990.	dichotomiflorum.
1008.	nitidum.
1010.	longifolium.
1011.	condensum.
1012.	agrostoides.
1021.	anceps.
1022.	arenicoloides.
1023.	equilaterale.
1024.	glabrifolium.
1025.	lancearium.
1036.	malacon.
1037.	fusiforme.
1038.	commutatum.
1049.	verrucosum.
1051.	rhizomatum.
1052.	paludivagum.
1053.	equilaterale.
1063.	trifolium.
1064.	laxiflorum.
1068.	wrightianum.
1073.	anceps.
1080.	ovale.
1085.	pauciciliatum.
1086.	polycaulon.
1087.	wrightianum.
1088.	flavovirens.
1098.	commutatum.

COMBS, R.—Continued.

1112.	tenerum.
1116.	verrucosum.
1117.	erectifolium.
1120.	agrostoides.
1125.	rhizomatum.
1140.	microcarpon.
1144.	condensum.
1154.	longifolium.
1161.	malacon.
1164.	webberianum.
1168.	longifolium.
1169.	patulum.
1170.	maximum.
1180½.	longifolium.
1187.	glabrifolium.
1192.	rhizomatum.
1195.	hemitomon.
1198.	agrostoides.
1204.	agrostoides.
1206.	anceps.
1207.	agrostoides.
1217a.	rhizomatum.
1218.	lucidum.
1220.	bartowense.
1234.	verrucosum.
1235.	longifolium.
1237.	joorii.
1240.	lancearium.
1241.	fusiforme.
1246.	hians.
1249.	virgatum.
1251.	dichotomiflorum.
1252.	rhizomatum.
1253.	paludivagum.
1261.	hians.
1264.	rhizomatum.
1265.	barbinode.
1266.	tenerum.
1269.	verrucosum.
1270.	hemitomon.
1280.	virgatum.
1288.	patentifolium.
1294.	verrucosum.
1297.	virgatum.
1303.	rhizomatum.
1310.	maximum.
1311.	barbinode.
1313.	glabrifolium.
1316.	glabrifolium.
1323.	hemitomon.
1325.	hians.
1333.	patentifolium.
1338.	polycaulon.

COMBS, R.—Continued.

1340. fusiforme.
1343. fusiforme.
1344. chamaelonche.
1393. joorii.
1394. flavovirens.
1395. rhizomatum.
1398. anceps.
1400. joorii.
1419. dichotomiflorum.
1426. gymnocarpon.
1427. joorii.
1431. reptans.
1435. capillare.
1436. dichotomiflorum.

COMMONS, A.

23. hemitomon.
25. stipitatum.
27. clandestinum.
28. scoparium.
29. depauperatum.
30. capillare.
32. scoparium.
37. ashei.
38. villosissimum.
42. lindheimeri.
43. commonsianum.
45. oricola.
47. polyanthes.
48. commutatum.
49. sphaerocarpon.
50. sphaerocarpon.
52. villosissimum.
53. ashei.
54. oligosanthes.
55. lindheimeri.
56. villosissimum in part.
57. miliaceum.
58. columbianum thinium.
59. oricola.
60. oricola.
61. ashei.
64. lindheimeri.
66. lindheimeri.
67. lindheimeri.
68. lindheimeri.
70. lindheimeri.
71. lindheimeri.
224. longifolium.
225. anceps.
228. amarum.
229. dichotomiflorum.
230. dichotomiflorum.

COMMONS, A.—Continued.

231. verrucosum.
281. scribnerianum.
282. scribnerianum.
283. scoparioides.
284. sphaerocarpon.
285. microcarpon.
286. meridionale.
289. huachucae silvicola.
290. huachucae silvicola.
291. lindheimeri.
292. huachucae silvicola.
293. huachucae silvicola.
294. dichotomum.
295. dichotomum.
296. barbulatum.
297. dichotomum.
298. sphaerocarpon.
300. clandestinum.
301. latifolium in part.
302. clandestinum.
303. anceps.
304. longifolium.
305. stipitatum.
306. polyanthes.
307. polyanthes.
308. ashei.
309. commutatum.
340. spretum.
341. commonsianum.
342. lanuginosum.
343. longifolium.
344. longifolium.
345. clutei.
346. microcarpon.
347. microcarpon.
348. spretum.
349. ashei.
350. sphaerocarpon.
356. ashei.
357. ashei.
358. werneri.
359. scoparioides.
360. huachucae silvicola.
361. boscii.
362. huachucae silvicola.
363. lindheimeri.
364. huachucae silvicola.
365. tennesseense.

COSTA RICA.[a]

412. barbinode.
1183. polygonatum.
1244. viscidellum.

---

[a] Herbarium Instituto físico-geográfico. Collectors Biolley, Cooper, Pittier, Tonduz.

Costa Rica—Continued.

2035.	fasciculatum.
2479.	polygonatum.
2598.	zizanioides.
2633.	ghiesbreghtii.
2995.	maximum.
3071.	laxum.
3107.	polygonatum.
3117.	laxum.
3123.	trichoides.
3358.	viscidellum.
3583.	stenodes.
3619.	virgatum.
3631.	parvifolium.
3640.	costaricense.
3651.	trichoides.
3661.	costaricense.
3673.	costaricense.
3679.	rudgei.
3685.	cayennense.
3687.	costaricense.
4042.	polygonatum.
4092.	polygonatum.
4458.	trichoides.
4459.	pulchellum.
4460.	pulchellum in part.
4626.	costaricense.
4860.	costaricense.
4864.	laxum.
4865.	trichoides.
4871.	laxum.
4875.	rudgei.
4881.	pulchellum.
7360.	pulchellum.
7463.	pilosum.
7467.	hirsutum.
7471.	fasciculatum.
7878.	sphaerocarpon.
7944.	olivaceum.
8557.	polygonatum.
8566.	zizaniodes.
8600.	trichanthum.
8670.	trichanthum.
8818.	virgultorum.
8829.	virgultorum.
9050.	maximum.
9080.	parviglume.
9114.	maximum.
9495.	pilosum.
9727.	fasciculatum.
9754.	trichoides.
10379.	trichoides.
10576.	rudgei.
10588.	rudgei.

Costa Rica—Continued.

10589.	stenodes.
10594.	parvifolium.
10615.	millegrana.
10745.	sphaerocarpon.
	olivaceum.
11017.	glutinosum.
11276.	zizanioides.
11393.	barbinode.
11396.	polygonatum.
11866.	sphaerocarpon.
12002.	glutinosum.
12064.	rudgei.
13749.	fasciculatum.
16081.	trichoides.
16123.	laxum.

Curtiss, A. H.

B.	arenicoloides.
	nudicaule.
D.	chrysopsidifolium.
F.	pauciciliatum.
	villosissimum.
K.	boscii.
Q.	scabriusculum.
R.	lanuginosum.
21.	chamaelonche.
113.	adspersum.
115.	barbinode.
124.	maximum.
174.	condensum.
175.	geminatum.
177.	dichotomiflorum.
267.	cayennense.
305.	pilosum.
307.	acuminatum.
328.	acuminatum.
384.	diffusum.
406.	fusiforme.
464.	laxum.
494.	diffusum.
536.	reptans.
598.	trichanthum.
691.	reptans.
714.	trichoides.
748.	adspersum.
3578.	amarulum.
3579.	rhizomatum.
	tenerum.
3583*.	commutatum.
	arenicoloides.
	ovale.
	nudicaule.
3585.	hemitomon.
3587.	angustifolium.

Curtiss, A. H.—Continued.

3587*.	arenicoloides.
3589.	fasciculatum.
3594.	hians.
3597*.	strigosum.
3597**.	maximum.
3599.	erectifolium.
3600A.	dichotomum.
	equilaterale.
	lancearium.
	nitidum.
	pauciciliatum.
3601.	geminatum.
3602*.	chamaelonche.
3606**.	adspersum.
3607.	chapmani.
3608.	verrucosum.
3609.	virgatum.
3610.	scabriusculum.
4027.	commutatum.
4028.	arenicoloides.
4029.	lancearium.
4031.	strigosum.
4033.	longiligulatum.
4035.	tenerum.
4036.	verrucosum.
4636.	commutatum.
4637.	webberianum.
4811.	hemitomon.
4812.	erectifolium.
4877.	ovale.
4878.	scabriusculum.
5083.	tenerum.
5084.	virgatum.
5252.	verrucosum.
5289.	rhizomatum.
5298.	condensum.
5302.	agrostoides.
5386.	bartowense.
5431.	adspersum.
5457.	chapmani.
5527.	amarulum.
5534.	hians.
5537.	xalapense.
5576.	condensum.
5576A.	condensum.
5576B.	longifolium.
5576C.	tenerum.
5588.	chamaelonche.
5747.	rhizomatum.
5804.	chamaelonche.
5808.	verrucosum.
5813.	ovale.
5864.	oligosanthes.

Curtiss, A. H.—Continued.

5866.	ovale.
5912.	wrightianum.
5936.	anceps.
6047.	boscii molle.
6403.	lucidum.
6513.	repens.
6601.	lucidum.
6602.	xalapense.
6610.	webberianum.
6616.	ovale.
6626.	lancearium.
6627.	polycaulon.
6628.	chamaelonche.
6635.	xalapense.
6636.	roanokense.
6639.	aciculare.
6652.	wrightianum.
6705.	adspersum.
6791.	xalapense.
6803.	angustifolium.
6811.	auburne.
6817.	erectifolium.
	leucothrix.
6827.	lanuginosum.
6828.	sphaerocarpon.
6836.	hians.
6867.	miliaceum.
6887.	anceps.
6888.	agrostoides.
6890.	agrostoides.
6919.	combsii.
6925A.	combsii.

Cuthbert, A.

382.	trifolium.
387.	villosissimum.
388.	depauperatum.
392.	boscii molle.
427.	ashei.
431.	annulum.
529.	lucidum.
962.	dichotomum.
1015.	virgatum cubense.
1119.	xalapense.
1120.	villosissimum.
1121.	oligosanthes.
1128.	agrostoides.
1157.	sphaerocarpon.
1158.	sphaerocarpon.
1159.	trifolium.
1160.	ensifolium.
1161.	microcarpon.
1162.	boscii molle.
1163.	ashei.

CUTHBERT, A.—Continued.
1164. pseudopubescens.
1165. angustifolium.
1166. aciculare.
1167. oligosanthes.

DAVY, J. B.
5894. pacificum.
5971. occidentale.
6092. occidentale.
6745. pacificum.
6780. pacificum.

DEAM, C. C.
424. trichanthum.
2065. tennesseense.
2638. virgatum.
3218. linearifolium.
5386. boscii.
5392. polyanthes.
6041. trichoides.
6143. molle.
6267. fasciculatum.
6268. maximum.
6467. ashei.
6595. commutatum.
6753. perlongum.
6883. xalapense.

DEWEY, L. H.
53. anceps.
73. boscii molle.
92. boscii molle.
134. virgatum.
235. boscii.
280. boscii.
408. verrucosum.

DODGE, C. K.
17. leibergii.
20. leibergii.
38. implicatum.
49. lindheimeri.
60. villosissimum.
62. leibergii.
78. depauperatum.
83. villosissimum.
84. leibergii.
124. flexile.
128. flexile.
130. flexile.

DORNER, H. B.
12. virgatum.
23. dichotomiflorum.
35. leibergii.
82. latifolium.
83. dichotomum.
84. huachucae silvicola.
85. virgatum,

DORNER, H. B.—Continued.
86. dichotomiflorum.
87. gattingeri.
88. scribnerianum.
91. huachucae silvicola.
93. huachucae silvicola.

DRUMMOND, T.
286. filipes.
367. hemitomon.
381. scoparium.
384. filipes.
394. filipes.
452. patulum.
454. huachucae silvicola.
456. xalapense.
457. xalapense.
461. hemitomon.

DUSS, PÈRE.
536. diffusum.
537. fasciculatum.
538. fasciculatum.
539. barbinode.
1288. maximum.
1290. reptans.
1293. geminatum.
1321. trichoides.
2681. trichoides.
2689. barbinode.
2690. geminatum.
2691. fasciculatum.
3177. utowanaeum.
3178. dichotomiflorum.
3179. laxum.
3180. adspersum.
3184. ghiesbreghtii.
3186. maximum.
3529. reptans.
3584. geminatum.
3917. hirsutum.
3919. condensum.
4154. pilosum.

EARLE, F. S., AND BAKER, C. F.
1522. pseudopubescens.
1527. auburne.
1530. wilmingtonense in part.
1531. commutatum.
1532. curtifolium.
1535. trifolium in part.
1537. pseudopubescens.
1544. annulum.
2455. reptans.

EATON, A. A.
164. agrostoides.
bartowense.
165. agrostoides.

Eaton, A. A.—Continued.

169.	joorii.
242.	agrostoides.
341.	anceps.
467.	bartowense.
574.	hemitomon.
578.	erectifolium.
589.	xalapense.
831.	xalapense.

Eggers, H. F. A.

165.	laxum.
293.	reptans.
1226.	maximum.
1328.	barbinode.
1329.	laxum.
2129.	xalapense.
3978.	exiguiflorum.
4305.	caerulescens.
4312.	caerulescens.
4405.	dichotomiflorum.
4512.	dichotomiflorum.
4870.	barbinode.
4875.	fasciculatum.
5350.	trichanthum.
5406.	ghiesbreghtii.
5534.	pilosum.
5810.	zizanioides.
5987.	trichoides.
14149.	stoloniferum.
14345.	megiston.
14481.	trichoides.
14585.	laxum.
15417.	trichoides.
15418.	fasciculatum.
15419.	ghiesbreghtii.
15422.	zizanioides.
15834.	fasciculatum.

Eggert, H.

7.	commutatum.
10.	angustifolium.
12.	scoparium.
13.	sphaerocarpon.
14.	polyanthes.
15.	microcarpon.
20.	dichotomum.
21.	strigosum.
22.	commutatum.
23.	sphaerocarpon.
24.	trifolium.
26.	boscii.
30.	huachucae silvicola.
34.	lindheimeri.
39.	depauperatum.

Eggert, H.—Continued.

40.	boscii.
42.	laxiflorum.
43.	commutatum.
44.	ashei.
44½.	dichotomum.
45.	commutatum.
46.	dichotomum.
58.	philadelphicum.
59.	verrucosum.
60.	scoparium.
78.	microcarpon.
82.	scoparium.
86.	xalapense.
89.	microcarpon.
95.	polyanthes.
110.	dichotomiflorum.
114.	clandestinum.
115.	sphaerocarpon.
116.	scoparium.
117.	hians.
124.	huachucae silvicola.
125.	agrostoides.
126.	virgatum.
127.	xalapense.
233.	depauperatum.
234.	scribnerianum.
235.	huachucae silvicola.
236.	microcarpon.
237.	lindheimeri.
239.	latifolium.
240.	polyanthes.
241.	flexile.
242.	tennesseense.
243.	tennesseense.
244.	huachucae silvicola.
245.	huachucae silvicola.
246.	dichotomum.
249.	scribnerianum.
250.	polyanthes.
253.	clandestinum.
254.	sphaerocarpon.
257.	commutatum.
287.	microcarpon.
288.	nitidum.
289.	huachucae silvicola.
290.	commutatum.
291.	villosissimum.
292.	villosissimum.
293.	villosissimum.
295.	scribnerianum.
296.	tennesseense.
297.	scribnerianum.

Eggleston, W. W.
1757. werneri.
1758. subvillosum.
1759. dichotomum.
2181. tennesseense.
2843. tsugetorum.

Farwell, O. A.
597. linearifolium.
597b. implicatum.
597d. huachucae silvicola.
642. subvillosum.
643. boreale.
643a. implicatum.
643b. huachucae.
755. perlongum.
764. xanthophysum.
893. flexile.
1378. latifolium.
1382. huachucae.
huachucae silvicola.
1388. sphaerocarpon.
1414. miliaceum.

Fendler, A.
368. pilosum.
946. polygonatum.
1634. zizanioides.
1638. sphaerocarpon.
1638β. olivaceum.
1641. millegrana.
1643. trichanthum.
2499. trichoides.

Fernald, M. L.
166. tennesseense.
166a. tennesseense.
239. boreale
271. virgatum.
276. latifolium.
280. scribnerianum.
292. clandestinum.
345. xanthophysum.
346. latifolium.
361. philadelphicum.
406. dichotomum.
500. implicatum.
501. subvillosum.
502. implicatum.
503. huachucae silvicola.
504. implicatum.
505. boreale.
506. werneri.
508. boreale.
509. huachucae silvicola.
510. spretum.
512. boreale.

Fernald, M. L.—Continued.
513. boreale.
514. boreale.
516. boreale.
517. boreale.
518. clandestinum.
519. xanthophysum.
520. xanthophysum.
521. xanthophysum.
2802. philadelphicum.

Gardner, G.
1178. rudgei.
1179. megiston.
1183. laxum.
1876. molle.
2353. molle.
2357. fasciculatum.
2361. molle.
3517. laxum.

Graves, C. B.
4. huachucae.
7. werneri.
8. huachucae silvicola.
10. columbianum.
11. tennesseense.
12. barbulatum.
14. villosissimum.
15. bicknellii.
16. werneri.
17. werneri.
76. lindheimeri.
77. boreale.
78. implicatum.
80. spretum.
82. boreale.
83. columbianum.
84. columbianum.
85. sphaerocarpon.
87. spretum.
88. ashei.
156. huachucae silvicola.
157. spretum.
158. lindheimeri.
163. latifolium.
164. latifolium.
165. implicatum.
166. huachucae silvicola.
167. philadelphicum.
171. meridionale.
172. meridionale.
236. stipitatum.
244. virgatum cubense.
248. longifolium.
256. longifolium.

Griffiths, D.

7.	barbipulvinatum.
15.	capillare.
22.	virgatum.
53.	virgatum.
82.	virgatum.
120.	capillare.
132.	virgatum.
206.	virgatum.
207.	capillare.
242.	virgatum.
278.	barbipulvinatum.
295.	virgatum.
371.	virgatum.
395.	virgatum.
399.	barbipulvinatum.
548.	scribnerianum.
684.	barbipulvinatum.
751.	virgatum.
836.	leibergii.
863.	perlongum.
871.	scribnerianum.
1514.	obtusum.
1520.	hirticaule.
1545.	fasciculatum chartaginense.
1546.	obtusum.
1596.	arizonicum.
1616.	fasciculatum chartaginense.
1654.	fasciculatum chartaginense.
1810.	arizonicum.
1813.	hallii.
1913.	arizonicum.
1918.	hirticaule.
1935.	obtusum.
1938.	hirticaule.
2006.	obtusum.
3309.	obtusum.
3313.	barbipulvinatum.
3356.	arizonicum.
3358.	hirticaule.
3362.	fasciculatum chartaginense.
3388.	hallii.
3405.	obtusum.
3427.	plenum.
4438.	pacificum.
4476.	pacificum.
4617.	pacificum.
4811.	bulbosum sciaphilum.
5047.	virgatum.
5196.	obtusum.

Griffiths, D.—Continued.

5401.	scribnerianum.
5463.	virgatum.
5504.	hallii.
5542.	obtusum.
5551.	barbipulvinatum.
5600.	hallii.
5612.	obtusum.
5664.	virgatum.
5735.	havardii.
5852.	barbipulvinatum.
5981.	arizonicum.
6123.	hirticaule.
6151.	arizonicum.
6168.	arizonicum.
6288.	hallii.
6306.	geminatum.
6323.	filipes.
6380.	ramisetum.
6381.	ciliatissimum.
6387.	filipes.
6432.	ciliatissimum.
6441.	ciliatissimum.
6445.	ciliatissimum.
6446.	firmulum.
6508.	fasciculatum.
6551.	sphaerocarpon.
6586.	pacificum.
6737.	arizonicum.
6747.	arizonicum.
6758.	hirticaule.
6759.	arizonicum.
6785½.	bulbosum sciaphilum.
6799.	hirticaule.
6800.	obtusum.
6857.	fasciculatum.
6891.	arizonicum.
6892.	hirticaule.
6894.	arizonicum.
6929.	arizonicum.
6938.	arizonicum.
6939.	arizonicum.
6939½.	pampinosum.
6959.	obtusum.
6990.	arizonicum.
7005.	hirticaule.
7017.	arizonicum.
7063.	lepidulum.
7083.	bulbosum.
7143.	arizonicum.
7146.	hirticaule.
7148.	arizonicum.
7194.	hirticaule.

Griffiths, D.—Continued.
7288. obtusum.
7297. fasciculatum chartaginense.
7299. fasciculatum chartaginense.
7317. hirticaule.
7357. hallii.
7399. arizonicum in part.
7400. plenum.
7401. plenum.
7408. hallii.

Hall, E.
231. wilcoxianum.
671. pacificum.
672. scribnerianum.
815. hians.
816. hallii in part.
817. dichotomiflorum.
819. agrostoides.
820. hemitomon.
823. geminatum.
824. ciliatissimum.
825. fasciculatum chartaginense.
827. obtusum.
828. joorii.
boscii.
829. scoparium.
830. helleri.
831. commutatum.
832. sphaerocarpon.
833. angustifolium.
834. ovinum.
pedicellatum.
nitidum.

Hansen, G.
599. capillare.
626. pacificum.
1381. pacificum.
1444. pacificum.
1723. occidentale.

Harper, R. M.
15. boscii molle.
60. commutatum.
70. clandestinum.
74. microcarpon.
77. xalapense.
88. lucidum.
95. dichotomum.
104. polyanthes.
110. scoparium.
146. oligosanthes.
147. mutabile.

Harper, R. M.—Continued.
150. scoparium.
183. xalapense.
184. philadelphicum.
210. scoparium.
221. commutatum.
281. microcarpon.
369. anceps.
382. dichotomiflorum.
410. scabriusculum.
429. virgatum.
459. longiligulatum.
522. gymnocarpon.
631. virgatum.
638. verrucosum.
742. amarum.
757. arenicoloides.
765. lanuginosum.
767. joorii.
828. angustifolium.
829. ensifolium.
838. hians.
839. longiligulatum.
881. scabriusculum.
1007. hemitomon.
1037. virgatum.
1045. tenerum.
1081. combsii.
1085. xalapense.
1087. sphaerocarpon.
1105. microcarpon.
1106. joorii.
1220. virgatum.
1239. agrostoides.
1349. yadkinense.
1366. boscii.
1394. erectifolium.
1399. lanuginosum.
1435. mutabile.
1485. erectifolium.
1575. longiligulatum.
1623. commutatum.
1679. combsii.
1689. lancearium.
1730. agrostoides.
1760. lucidum.
1812. boscii.
2014. combsii.
2140. xalapense.

Hart, J.
73. polygonatum.
78. fasciculatum.
87. trichanthum.
726. zizanioides.

Hart, J.—Continued.

732.	pilosum.
736.	acuminatum.
785.	fasciculatum.
792.	glutinosum.
797.	maximum.
806.	geminatum.
838.	reptans.
840.	fasciculatum.
2177.	laxum.
2289.	laxum.
3293.	pilosum.

Heller, A. A.

100.	barbinode.
135.	fasciculatum.
157.	trichoides.
377.	maximum.
387.	trichoides.
497.	reptans.
522.	laxum.
531.	trichoides.
639.	pauciciliatum.
701.	flexile.
968.	polyanthes.
982.	chrysopsidifolium.
982b.	pauciciliatum.
1312.	tsugetorum.
1316.	parvifolium.
1378.	laxum.
1490.	filipes.
1603.	reverchoni.
1726.	pedicellatum.
1736.	pedicellatum.
1741.	obtusum.
1752.	lindheimeri.
1759.	helleri.
1766.	pedicellatum.
1883.	filipes. dichotomiflorum.
1888.	lindheimeri.
1898.	plenum.
3978.	occidentale.
4058.	scribnerianum.
4082.	anceps.
4083.	commutatum.
4084.	huachucae silvicola.
4085.	xalapense.
4088.	microcarpon.
4103.	hians.
4120.	joorii.
4145.	hians.
4160.	tennesseense.
4209.	xalapense.
4210.	dichotomiflorum.

Heller, A. A.—Continued.

4221.	brachyanthum.
4235.	agrostoides.
4236.	scoparium.
4237.	microcarpon.
4238.	consanguineum.
4246.	dichotomiflorum.
4528.	fasciculatum.
4768.	commutatum.
4769.	dichotomum.
4770.	ashei. microcarpon.
4771.	boscii.
4772.	polyanthes.
4774.	tennesseense.
4775.	depauperatum.
4776.	barbulatum.
4777.	flexile.
4778.	tennesseense.
4779.	boscii molle.
4780.	ashei.
4781.	clandestinum.
4783.	dichotomum.
4785.	huachucae silvicola.
4786.	flexile.
4787.	microcarpon.
4789.	philadelphicum.
4790.	meridionale.
4791.	huachucae silvicola.
6094.	trichoides.
6226.	fasciculatum.
6293.	barbinode.
6302.	fasciculatum.
6442.	pauciciliatum.
7856.	pacificum.

Hill, E. J.

37 in 1907.	praecocius.
49 in 1909.	praecocius.
50 in 1909.	boreale.
53 in 1907.	albemarlense.
83 in 1908.	huachucae silvicola.
84 in 1908.	dichotomum.
85 in 1908.	huachucae silvicola.
86 in 1908.	tennesseense.
88 in 1908.	sphaerocarpon.
90 in 1908.	sphaerocarpon.
91 in 1906.	leibergii.
97 in 1908.	boreale.
98 in 1905.	meridionale.
98 in 1908.	huachucae.
99 in 1905.	implicatum.
100 in 1905.	pseudopubescens.

Hill, E. J.—Continued.

101 in 1905.	pseudopubescens.
124 in 1905.	tsugetorum.
128 in 1906.	spretum.
129 in 1905.	tsugetorum.
129 in 1906.	barbulatum.
130 in 1905.	huachucae.
141 in 1905.	tennesseense.
145 in 1906.	meridionale.
158 in 1906.	clandestinum.
162 in 1878.	tennesseense.
162 in 1906.	spretum.
163 in 1906.	implicatum.
171 in 1907.	huachucae.
177 in 1898.	verrucosum.
182 in 1907.	huachucae.
183½ in 1907.	lindheimeri.
184 in 1907.	implicatum.
185 in 1907.	implicatum.
201 in 1898.	oligosanthes.
217 in 1898.	huachucae.

Hitchcock, A. S.

4.	nitidum.
6.	yadkinense.
7.	philadelphicum.
10.	auburne.
14.	leucothrix.
15.	nitidum.
16.	longiligulatum.
17.	aciculare.
19.	boscii.
20.	oligosanthes.
25.	flavovirens.
26.	sphaerocarpon inflatum.
47.	oricola.
102.	ashei.
104.	rhizomatum.
107.	ovale.
108.	arenicoloides.
109.	neuranthum.
110.	xalapense.
111.	laxiflorum.
112.	polycaulon.
114.	fusiforme.
115.	polycaulon.
116.	chrysopsidifolium.
117.	fusiforme.
118.	bicknellii.
119.	nitidum.
120.	boreale.
121.	boreale.
122.	dichotomum.
123.	barbulatum.
124.	barbulatum.

Hitchcock, A. S.—Continued.

125.	barbulatum.
126.	albemarlense.
127.	implicatum.
129.	agrostoides.
130.	implicatum.
132.	implicatum.
133.	huachucae.
134.	tsugetorum.
135.	tsugetorum.
136.	huachucae silvicola.
137.	huachucae silvicola.
138.	tennesseense.
139.	tennesseense.
140.	acuminatum.
141.	utowanaeum.
142.	geminatum.
143.	geminatum.
144.	distantiflorum.
145.	reptans.
146.	reptans.
150.	dichotomiflorum.
151.	dichotomiflorum.
152.	elephantipes.
153.	virgatum cubense.
154.	tenerum.
155.	stenodes.
156.	maximum.
157.	maximum.
160.	ovale.
161.	villosissimum.
162.	fasciculatum chartaginense.
163.	texanum.
164.	verrucosum.
165.	philadelphicum.
166.	philadelphicum.
167.	gattingeri.
168.	amarulum.
169.	amarum.
170.	virgatum.
171.	virgatum.
172.	condensum.
174.	condensum.
175.	rhizomatum
177.	laxum.
178.	laxum.
179.	exiguiflorum.
180.	millegrana.
181.	parvifolium.
201.	bicknellii.
215.	scoparium.
216.	verrucosum.
217.	dichotomiflorum.

Hitchcock, A. S.—Continued.
218. capillarioides.
219. hallii.
220. filipes.
221. hallii.
222. boscii.
225. stipitatum.
226. virgatum.
227. amarum.
228. anceps.
229. anceps.
230. anceps
310. rhizomatum.
316. wilmingtonense.
326. commonsianum.
332. tenue.
335. addisonii.
336. commonsianum
337. flavovirens.
338. chamaelonche.
339. chamaelonche.
340. depauperatum.
341. depauperatum.
342. ciliatum.
343. xalapense.
344. aciculare.
345. aciculare.
346. aciculare.
347. aciculare.
348. angustifolium.
349. angustifolium.
350. arenicoloides.
351. arenicoloides.
352. arenicoloides.
353. bicknellii.
354. mattamuskeetense.
356. caerulescens.
357. dichotomum.
359. barbulatum.
360. barbulatum.
361. yadkinense.
362. lucidum.
363. lucidum.
364. lucidum.
365. lucidum.
366. lucidum.
367. lucidum.
368. lucidum.
369. lucidum.
370. microcarpon.
371. cryptanthum.
372. longiligulatum.
373. wrightianum.
374. wrightianum.

Hitchcock, A. S.—Continued.
375. longiligulatum.
376. leucothrix.
377. leucothrix.
378. spretum.
379. spretum.
380. lindheimeri.
381. lindheimeri.
384. meridionale.
385. meridionale.
386. lanuginosum.
387. lanuginosum.
389. lanuginosum.
390. lanuginosum.
391. villosissimum.
392. villosissimum.
393. villosissimum.
394. villosissimum.
395. villosissimum.
396. villosissimum.
397. pseudopubescens.
398. pseudopubescens.
399. addisonii.
406. columbianum thinium.
407. commonsianum.
408. commonsianum.
410. polyanthes.
411. erectifolium.
413. patulum.
414. pauciciliatum.
416. pauciciliatum.
417. oligosanthes.
418. oligosanthes.
419. oligosanthes.
420. ravenelii.
421. equilaterale.
422. ashei.
423. ashei.
424. ashei.
425. ashei.
426. commutatum.
427. commutatum.
428. commutatum.
429. mutabile.
430. mutabile.
431. clandestinum.
432. clandestinum.
433. latifolium.
434. boscii molle.
435. boscii molle.
436. boscii molle.
437. scoparium.
438. scabriusculum.
439. philadelphicum.

Hitchcock, A. S.—Continued.

440. amarulum.
441. amarum.
442. virgatum.
444. condensum.
445. agrostoides.
446. longifolium.
447. longifolium.
448. anceps.
449. anceps.
450. rhizomatum.
451. hians.
503. ashei.
505. tennesseense.
550. ovale.
551. lindheimeri.
552. lindheimeri.
553. spretum.
554. leucothrix.
555. albomarginatum.
556. addisonii.
557. addisonii.
558. oricola.
562. sphaerocarpon.
563. patentifolium.
564. ashei.
565. ashei.
566. ashei.
567. ashei.
568. ashei.
569. commutatum.
570. commutatum.
571. commutatum.
572. commutatum.
573. mutabile.
574. equilaterale.
575. equilaterale.
576. joorii.
577. joorii.
578. malacophyllum.
579. oligosanthes.
580. oligosanthes.
581. oligosanthes.
582. oligosanthes.
583. clandestinum.
584. clandestinum.
585. clandestinum.
586. latifolium.
587. latifolium.
588. latifolium.
589. latifolium.
590. boscii.
591. boscii.
592. boscii molle.

Hitchcock, A. S.—Continued.

593. scoparium.
594. scoparium.
595. scabriusculum.
596. microcarpon.
597. linearifolium.
598. linearifolium.
599. huachucae silvicola.
613. geminatum.
627. fusiforme.
627½. virgatum.
630. webberianum.
633. equilaterale.
634. ovale.
636. joorii.
639. albomarginatum.
648. bartowense.
652. joorii.
653. equilaterale.
654. patulum.
655. equilaterale.
658. bartowense.
659. xalapense.
660. joorii.
661. ovale.
664. lancearium.
665. polycaulon.
666. albomarginatum.
667. albomarginatum.
668. ovale.
670. albomarginatum.
673. xalapense.
674. joorii.
677. ovale.
678. lancearium.
679. albomarginatum.
687. nitidum.
688. ovale.
689½. polycaulon.
690. caerulescens.
692. albomarginatum.
695. condensum.
696. hemitomon.
697. bartowense.
699. condensum.
705. neuranthum
706. caerulescens.
710. neuranthum.
711. polycaulon.
712. trifolium.
713. lancearium.
714. albomarginatum.
715. caerulescens.
718. nitidum.

Hitchcock, A. S.—Continued.

719.	ovale.
720.	albomarginatum.
721.	polycaulon.
728.	virgatum.
729.	chamaelonche.
730.	patentifolium.
733.	pauciciliatum.
734.	breve.
735.	webberianum.
737.	pauciciliatum.
743.	virgatum cubense.
744.	hemitomon.
747.	condensum.
748.	webberianum.
750.	pauciciliatum.
755.	patentifolium.
756.	joorii.
757.	commutatum.
759.	chamaelonche.
760.	joorii.
761.	albomarginatum.
761½.	ovale.
762.	polycaulon.
763.	polycaulon.
764.	lancearium.
765.	patulum.
765½.	webberianum.
766.	lancearium.
766½.	webberianum.
767.	patentifolium.
767½.	flavovirens.
768.	albomarginatum.
769.	chamaelonche.
770.	lancearium.
771.	polycaulon.
772.	polycaulon.
773.	xalapense.
774.	nitidum.
775.	chrysopsidifolium.
778.	chamaelonche.
779.	trifolium.
781.	chamaelonche.
782.	webberianum.
784.	lancearium.
785.	ovale.
786.	fusiforme.
787.	ovale.
791.	fusiforme.
792.	webberianum.
793.	pauciciliatum.
794.	chamaelonche.
795.	vernale.
796.	patentifolium.

Hitchcock, A. S.—Continued.

797.	pauciciliatum.
798.	vernale.
800.	leucothrix.
801.	malacon.
802.	patentifolium.
803.	pauciciliatum.
804.	pauciciliatum.
805.	leucothrix.
806.	chamaelonche.
807.	chamaelonche.
808.	pauciciliatum.
809.	vernale.
811.	webberianum.
813.	malacon.
814.	nitidum.
817.	albomarginatum.
818.	chamaelonche.
819.	pauciciliatum.
820.	ovale.
821.	lancearium.
823.	albomarginatum.
824.	lancearium.
825.	lancearium.
826.	albomarginatum.
827.	polycaulon.
828.	chamaelonche.
833.	ovale.
834.	fusiforme.
835.	angustifolium.
836.	polycaulon.
837.	fusiforme.
838.	albomarginatum.
838½.	webberianum.
839.	albomarginatum.
840.	webberianum.
843.	polycaulon.
844.	lancearium.
845.	malacon.
846.	ovale.
847.	ovale.
848.	albomarginatum.
849.	lancearium.
850.	fusiforme.
851.	ovale.
855.	webberianum.
856.	patentifolium.
863.	hemitomon.
864.	lancearium.
865.	chamaelonche.
866.	chamaelonche.
867.	curtifolium.
868.	polycaulon.
869.	lancearium.

Hitchcock, A. S.—Continued.

870. albomarginatum.
872. hians.
873. chamaelonche.
874. erectifolium.
875. longiligulatum.
876. albomarginatum.
877. fusiforme.
880. albomarginatum.
881. longiligulatum.
882. albomarginatum.
884. albomarginatum.
885. chamaelonche.
886. albomarginatum.
887. chamaelonche.
888. lancearium.
889. pauciciliatum.
890. trifolium.
893. glabrifolium.
895. chamaelonche.
897. caerulescens.
898. nitidum.
899. fusiforme.
900. ovale.
901½. flavovirens.
903. polycaulon.
904. caerulescens.
905. flavovirens.
906. xalapense.
908. nitidum.
909. joorii.
910. webberianum.
911. lancearium.
912. fusiforme.
913. lancearium.
914. ovale.
915. caerulescens.
915½. patentifolium.
916. chamaelonche.
918. webberianum.
919. lucidum.
920. trifolium.
921. trifolium.
922. patulum.
923. fusiforme.
923½. polycaulon.
924. chamaelonche.
927. xalapense.
928. chamaelonche.
929. lancearium.
930. patentifolium.
930½. webberianum.
931. vernale.
932. lancearium.

Hitchcock, A. S.—Continued.

933. polycaulon.
934. chamaelonche.
935. xalapense.
936. vernale.
937. lancearium.
938. trifolium.
938½. roanokense.
939. roanokense.
940. trifolium.
941. vernale.
942. vernale.
943. polycaulon.
944. chamaelonche.
945. albomarginatum.
946. patulum.
947. joorii.
949. albomarginatum.
950. polycaulon.
951. chamaelonche.
952. chamaelonche.
953. trifolium.
954. chamaelonche.
955. webberianum.
956. lancearium.
957. longiligulatum.
958. longiligulatum.
958½. vernale.
959. vernale.
960. vernale.
961. nitidum.
962. trifolium.
963. albomarginatum.
964. fusiforme.
965. caerulescens.
966. glabrifolium.
968. ovale.
969. patentifolium.
970. patentifolium.
971. patentifolium.
972. webberianum.
973. chamaelonche.
974. polycaulon.
975. chamaelonche.
976. joorii.
977. lancearium.
978. glabrifolium.
979. webberianum.
980. fusiforme.
984. angustifolium.
985. chamaelonche.
986. consanguineum.
987. roanokense.
988. longiligulatum.

Hitchcock, A. S.—Continued.

989. aciculare.
990. albomarginatum.
991. ciliatum.
992. pauciciliatum.
993. ciliatum.
994. lancearium.
997. trifolium.
998. roanokense.
999. consanguineum.
1000. ciliatum.
1003. lancearium.
1004. vernale.
1005. longiligulatum.
1005½. spretum.
1006. sphagnicola.
1008. commutatum.
1009. laxiflorum.
1010. ravenelii.
1010½. boscii molle.
1011. joorii.
1012. arenicoloides.
1013. ovale.
1013½. pseudopubescens.
1014. oligosanthes.
1015. mutabile.
1016. lancearium.
1019. ciliatum.
1020. vernale.
1021. albomarginatum.
1022. albomarginatum.
1023. trifolium.
1024. webberianum.
1025. lancearium.
1026. lucidum.
1027. chamaelonche.
1028. lancearium.
1032. lanuginosum.
1033. lancearium.
1035. mutabile.
1036. ciliatum.
1037. chamaelonche.
1038. trifolium.
1039. angustifolium.
1039½. lancearium.
1040. ciliatum.
1041. vernale.
1042. trifolium.
1043. strigosum.
1046. villosissimum.
1047. ravenelii.
1048. pseudopubescens.
1049. commutatum.
1050. trifolium.

Hitchcock, A. S.—Continued.

1052. scabriusculum.
1053. trifolium.
1054. fusiforme.
1055. oligosanthes.
1058. curtifolium.
1059. lucidum.
1062. ciliatum.
1063. trifolium.
1066. vernale.
1067. ensifolium.
1068. longiligulatum.
1069. consanguineum.
1070. consanguineum.
1072. trifolium.
1073. xalapense.
1077. arenicoloides.
1077½. ovinum.
1078. sphaerocarpon.
1079. lanuginosum.
1080. pseudopubescens.
1081. nitidum.
1082. aciculare.
1083. consanguineum.
1084. sphaerocarpon.
1087. angustifolium.
1088. trifolium.
1089. trifolium.
1090. pseudopubescens.
1091. angustifolium.
1092. vernale.
1093. lancearium.
1094. curtifolium.
1095. sphaerocarpon.
1096. pseudopubescens.
1099. sphaerocarpon.
1100. trifolium.
1101. polycaulon.
1102. sphaerocarpon.
1103. mutabile.
1104. commutatum.
1105. angustifolium.
1106. oligosanthes.
1107. ravenelii.
1108. commutatum.
1109. villosissimum.
1111. trifolium.
1112. pseudopubescens.
1113. pauciciliatum.
1114. chamaelonche.
1115. angustifolium.
1124. xalapense.
1126. sphaerocarpon.
1127. aciculare.

Hitchcock, A. S.—Continued.

1128.	nitidum.
1129.	lanuginosum.
1130.	trifolium.
1131.	ovinum.
1132.	sphaerocarpon.
1133.	hians.
1134.	sphaerocarpon.
1135.	lanuginosum.
1136.	lindheimeri.
1137.	sphaerocarpon.
1138.	lindheimeri.
1139.	consanguineum.
1139½.	aciculare.
1140.	aciculare.
1141.	ovinum.
1142.	joorii.
1143.	nitidum.
1144.	roanokense.
1146.	trifolium.
1147.	lanuginosum.
1148.	nitidum.
1149.	microcarpon.
1150.	ovinum.
1151.	angustifolium.
1152.	lanuginosum.
1153.	nitidum.
1154.	nitidum.
1155.	consanguineum.
1156.	lindheimeri.
1162.	strigosum.
1163.	leucothrix.
1164.	yadkinense.
1165.	lindheimeri.
1171.	thurowii.
1172.	ovinum.
1173.	helleri.
1174.	roanokense.
1175.	spretum.
1179.	helleri.
1181.	sphaerocarpon.
1182.	xalapense.
1184.	hians.
1186.	helleri.
1187.	ravenelii.
1190.	sphaerocarpon.
1192.	ovinum.
1193.	angustifolium.
1194.	oligosanthes.
1195.	thurowii.
1202.	lindheimeri.
1203.	lindheimeri.
1207.	joorii.
1208.	joorii.

Hitchcock, A. S.—Continued.

1209.	angustifolium.
1210.	ovinum.
1212.	helleri.
1213.	sphaerocarpon.
1214.	huachucae silvicola.
1215.	lindheimeri.
1216.	sphaerocarpon.
1221.	angustifolium.
1222.	ovinum.
1225.	aciculare.
1226.	thurowii.
1238.	lanuginosum.
1239.	xalapense.
1240.	dichotomum.
1241.	sphaerocarpon.
1244.	boscii.
1245.	ravenelii.
1246.	dichotomum.
1249.	depauperatum.
1250.	ovinum.
1251.	dichotomum.
1252.	barbulatum.
1253.	commutatum.
1255.	huachucae silvicola.
1256.	villosissimum.
1258.	lanuginosum.
1259.	villosissimum.
1260.	xalapense.
1261.	angustifolium.
1262.	dichotomum.
1263.	oligosanthes.
1264.	angustifolium.
1267.	trifolium.
1268.	commutatum.
1269.	angustifolium.
1270.	polyanthes.
1272.	boscii.
1274.	commutatum.
1274½.	oligosanthes.
1275.	villosissimum.
1277.	trifolium.
1278.	lindheimeri.
1282.	hians.
1283.	boscii molle.
1284.	sphaerocarpon.
1285.	sphaerocarpon inflatum.
1286.	commutatum.
1287.	lindheimeri.
1288.	ravenelii.
1289.	villosissimum.
1290.	xalapense strictirameum.
1291.	commutatum.
1292.	dichotomum.

Hitchcock, A. S.—Continued.
1293. oligosanthes.
1294. ravenelii.
1295. scribnerianum.
1296. scribnerianum.
1297. lanuginosum.
1298. angustifolium.
1299. villosissimum.
1300. boscii.
1301. boscii molle.
1303. depauperatum.
1305. trifolium.
1306. huachucae silvicola.
1307. sphaerocarpon.
1310. xalapense.
1311. xalapense strictirameum.
1319. commutatum.
1320. boscii.
1321. boscii molle.
1323. ashei.
1325. wilmingtonense.
1327. ashei.
1328. commutatum.
1330. dichotomum.
1331. pseudopubescens.
1332. angustifolium.
1333. xalapense strictirameum.
1334. ravenelii.
1336. pseudopubescens.
1337. curtifolium.
1339. commutatum.
1340. angustifolium.
1343. microcarpon.
1344. boscii molle.
1348. commutatum.
1350. barbulatum.
1352. dichotomum.
1353. ashei.
1354. depauperatum.
1356. pseudopubescens.
1357. pseudopubescens.
1357½. huachucae silvicola.
1358. tennesseense.
1360. depauperatum.
1361. xalapense.
1362. angustifolium.
1369. albomarginatum.
1370. ensifolium.
1371. ciliatum.
1372. leucothrix.
1373. consanguineum.
1375. aciculare.
1376. nitidum.
1377. cryptanthum.

Hitchcock, A. S.—Continued.
1378. scabriusculum.
1379. ensifolium.
1380. pseudopubescens.
1381. sphaerocarpon.
1382. consanguineum.
1383. pseudopubescens.
1384. villosissimum.
1387. trifolium.
1388. ashei.
1389. nitidum.
1390. ravenelii.
1391. xalapense.
1392. nitidum.
1393. microcarpon.
1394. pseudopubescens.
1395. lanuginosum.
1398. leucothrix.
1400. dichotomum.
1401. pseudopubescens.
1402. pseudopubescens.
1403. dichotomum.
1404. aciculare.
1405. ensifolium.
1406. ashei.
1407. ashei.
1408. angustifolium.
1410. oligosanthes.
1411. microcarpon.
1412. boscii.
1413. commutatum.
1414. commutatum.
1415. xalapense.
1416. barbulatum.
1416½. yadkinense.
1419. microcarpon.
1420. nitidum.
1421. nitidum.
1422. nitidum.
1423. nitidum.
1424. xalapense.
1425. ensifolium.
1426. sphaerocarpon.
1427. chamaelonche.
1428. albomarginatum.
1429. albomarginatum.
1430. ciliatum.
1431. lancearium.
1432. pauciciliatum.
1433. webberianum.
1434. albomarginatum.
1435. chamaelonche.
1436. chamaelonche.
1436½. ensifolium.

HITCHCOCK, A. S.—Continued.

1437.	pseudopubescens.
1438.	tenue.
1439.	ensifolium.
1440.	albomarginatum.
1442.	lucidum.
1447.	aciculare.
1449.	consanguineum.
1450.	strigosum.
1451.	ciliatum.
1455.	mattamuskeetense.
1457.	oligosanthes.
1458.	commutatum.
1459.	oligosanthes.
1460.	oligosanthes.
1461.	ashei.
1463.	ravenelii.
1465.	mutabile.
1466.	lancearium.
1466½.	angustifolium.
1467.	tenue.
1468.	lanuginosum.
1469.	cryptanthum.
1470.	lucidum.
1471.	consanguineum.
1472.	webberianum.
1473.	aciculare.
1474.	pseudopubescens.
1475.	angustifolium.
1476.	pseudopubescens.
1477.	pauciciliatum.
1479.	pauciciliatum.
1482.	auburne.
1483.	chamaelonche.
1484.	pseudopubescens.
1485.	pseudopubescens.
1486.	lancearium.
1487.	pauciciliatum.
1488.	chamaelonche.
1489.	ravenelii.
1490.	ciliatum.
1603.	lindheimeri.
1604.	boscii.
1605.	sphaerocarpon.
1606.	microcarpon.
1607.	sphaerocarpon.
1608.	villosissimum.
1609.	polyanthes.
1611.	microcarpon.
1612.	albemarlense.
1613.	lanuginosum.
1615.	sphaerocarpon.
1616.	sphaerocarpon.
1617.	addisonii.

HITCHCOCK, A. S.—Continued.

1618.	sphaerocarpon inflatum.
1619.	villosissimum.
1621.	huachucae silvicola.
1622.	lindheimeri.
1623.	villosissimum.
1624.	huachucae silvicola.
1626.	sphaerocarpon.
1627.	villosissimum.
1628.	albemarlense.
1629.	meridionale.
1630.	huachucae silvicola.
1631.	villosissimum.
1632.	columbianum.
1635.	villosissimum.
1636.	meridionale.
1637.	scoparium.
1638.	lanuginosum.
1639.	sphaerocarpon.
1640.	ashei.
1641.	barbulatum.
1643.	villosissimum.
1644.	villosissimum.
1902.	thermale.
2061.	thermale.
2086.	thermale.
2114.	barbipulvinatum.
2171.	pacificum.
2190.	pacificum.
2204.	barbipulvinatum.
2205.	barbipulvinatum.
2275.	barbipulvinatum.
2374.	barbipulvinatum.
2380.	capillare.
2383.	scribnerianum.
2391.	virgatum.
2395.	meridionale.
2398.	agrostoides.
2399.	polyanthes.
2403.	villosissimum.
2404.	polyanthes.
2407.	columbianum.
2408.	sphaerocarpon.
2409.	albemarlense.
2410.	ashei.
2411.	barbulatum.
2412.	sphaerocarpon inflatum.
2413.	columbianum.
2414.	depauperatum.
2415.	villosissimum.
2418.	columbianum.
2500.	praecocius.
2501.	perlongum.
2502.	scribnerianum.

Hitchcock, A. S.—Continued.
2504. leibergii.
2505. wilcoxianum.
2506. linearifolium.
2509. perlongum.
2511. scribnerianum.
2518. leibergii.
2519. scribnerianum.
2523. huachucae silvicola.
2524. praecocius.
2525. scribnerianum.
2528. huachucae.
2789. barbipulvinatum.
2798. barbipulvinatum.
2836. scribnerianum.
3069. barbipulvinatum.
3070. pacificum.
3071. pacificum.
3072. shastense.
3073. pacificum.
3074. scribnerianum.
3077. pacificum.
3214. pacificum.
3219. pacificum.
3232. pacificum.
3233. pacificum.
3234. pacificum.
3481. hirticaule.
3482. arizonicum.
3494. hirticaule.
3495. fasciculatum chartaginense.
3509. hirticaule.
3526. hirticaule.
3541. hirticaule.
3542. arizonicum.
3544. praecocius.
3547. hirticaule.
3553. hirticaule.
3561. fasciculatum chartaginense.
3562. arizonicum.
3573. hirticaule.
3598. fasciculatum.
3604. hirticaule.
3631. hirticaule.
3637. arizonicum.
3646. obtusum.
3658. hirticaule.
3661. obtusum.
3675. hirticaule.
3694. plenum.
3695. arizonicum.
3706. hallii.

Hitchcock, A. S.—Continued.
3716. bulbosum sciaphilum.
3730. hirticaule.
3737. obtusum.
3760. barbipulvinatum.
3762. hallii.
3763. obtusum.
3783. hallii.
3784. bulbosum sciaphilum.
3819. barbipulvinatum.
3830. obtusum.
3838. dichotomiflorum.
3840. virgatum.
3842. capillare.
3851. capillare.
3853. praecocius.
3854. scribnerianum.
3865. nodatum.
3866. firmulum.
4932. capillare.
5050. barbipulvinatum.
5083. barbipulvinatum.
5099. capillare.
5111. capillare.
5712. decolorans.
5822. decolorans.

Hitchcock, A. S., Lee Co. Pl.
147. adspersum.
148. adspersum.
159. adspersum.
469. erectifolium.
470. webberianum.
471. joorii.
472. chamaelonche.
473. longiligulatum.
474. ovale.
477. joorii.
478. nitidum.
479. nitidum.
480. xalapense.
481. lucidum.
482. polycaulon.
483. bartowense.
484. fasciculatum.
485. adspersum.
487. chapmani.
488. hians.
489. hians.
490. rhizomatum.
491. virgatum.
492. tenerum.
611. adspersum.
618. adspersum.
620. adspersum.
650. adspersum.

Hitchcock, A. S., Pl. Kan.

570a.	virgatum.
571.	scribnerianum.
571a.	scribnerianum.
571b.	leibergii.
572.	obtusum.
876.	anceps.
877.	agrostoides.
879.	wilcoxianum.
880.	linearifolium.
882.	huachucae silvicola.
883.	sphaerocarpon.
921.	scribnerianum.

House, H. D.

257.	anceps.
358.	virgatum.
413.	philadelphicum
450.	polyanthes.
831.	scribnerianum.
907.	tsugetorum.
911.	yadkinense.
947.	depauperatum.
949.	dichotomum.
957.	meridionale.
961.	ashei.
1041.	aculeatum.
1058.	sphaerocarpon.
1136.	huachucae silvicola.
1231.	implicatum.
1287.	tsugetorum.
1443.	stipitatum.
2105.	ashei.
2106.	commutatum.
2132.	clandestinum.
2136.	boscii.
2158.	villosissimum.
2161.	depauperatum.
2177.	xalapense.
2179.	commutatum.
2200.	ravenelii.
2211.	boscii molle.
2258.	meridionale.
2269.	villosissimum.
2305.	commutatum.
2387.	commutatum.
2413.	sphaerocarpon.
2430.	ashei.
2492.	sphaerocarpon.
2551.	xalapense strictirameum.
2575.	virgatum cubense.
2668.	virgatum cubense.

Jenman, G.

3969.	geminatum.
4081.	stoloniferum.

Jenman, G.—Continued.

4403.	trichoides.
4438.	geminatum.
5969.	pilosum.
5978.	rudgei.
5998.	barbinode.
6001.	zizanioides.
6008.	laxum.
6009.	laxum.
6022.	geminatum.
6024.	reptans.

Jermy, G.

6.	obtusum.
22.	fasciculatum chartaginense.
39.	reverchoni.
57.	huachucae silvicola.
203.	fasciculatum chartaginense.
219.	virgatum.
233.	reverchoni.
234.	reverchoni.
787.	virgatum.

Jones, M. E.

619.	tennesseense.
2294.	pacificum.
4019.	bulbosum sciaphilum.
4168.	obtusum.
4212.	hirticaule.
6035.	barbipulvinatum.
6069.	tennesseense.

Kearney, T. H.

3.	scoparium.
5.	dichotomum.
7.	sphaerocarpon inflatum.
9.	dichotomiflorum.
10.	columbianum thinium.
12.	sphaerocarpon.
13.	polyanthes.
16.	anceps.
17.	repens.
18.	dichotomiflorum.
	lindheimeri.
20.	anceps.
	polyanthes.
	virgatum.
21.	aciculare.
	clandestinum.
22.	huachucae silvicola.
24.	ciliatum.
	villosissimum.
25.	sphaerocarpon.
26.	lindheimeri.

Kearney, T. H.—Continued.
27. albemarlense.
scabriusculum.
28. angustifolium.
yadkinense.
29. villosissimum.
29a. tennesseense.
30. hians.
31. commutatum.
32. clandestinum.
lindheimeri.
33. huachucae silvicola.
34. ashei.
commutatum.
villosissimum.
35. barbulatum in part.
39. scabriusculum.
45. lucidum.
49. wrightianum in part.
50. microcarpon.
tenerum.
52. polyanthes.
53. xalapense.
54. ashei in part.
57. barbulatum.
polyanthes.
58. huachucae.
villosissimum.
61. rhizomatum.
67. scoparium.
72. flexile.
74. agrostoides.
75. xalapense.
80. capillare.
82. virgatum.
87. anceps.
88. flexile.
microcarpon.
92. chamaelonche.
96. polycaulon.
108. rhizomatum.
116. longifolium.
120. verrucosum.
121. hians.
138. rhizomatum.
139. tenerum.
140. patulum.
141. villosissimum.
145. chamaelonche.
146. leucothrix.
147. dichotomum.
151. philadelphicum.
156. scoparium.

Kearney, T. H.—Continued.
157. hemitomon.
158. virgatum.
167. lucidum.
168. virgatum.
172. commutatum.
173. hians.
176. adspersum.
177. chamelonche.
178. lancearium.
181. rhizomatum.
183. scoparium.
187. hians.
188. sphaerocarpon inflatum.
191. oligosanthes.
194. sphaerocarpon inflatum.
206. angustifolium.
207. ashei.
208. dichotomiflorum.
209. commonsianum.
212. xalapense.
215. aciculare.
arenicoloides.
216. oligosanthes.
217. sphaerocarpon.
218. consanguineum.
huachucae silvicola.
220. longifolium.
229. clandestinum.
234. dichotomum.
235. rhizomatum.
243. sphaerocarpon.
246. wrightianum.
247. aciculare.
250. ciliatum.
258. boscii.
260. lucidum.
267a. virgatum.
267b. virgatum cubense.
268. albomarginatum.
269. hemitomon.
270. scabriusculum.
274. anceps.
282. strigosum.
283. ciliatum.
284. aciculare.
consanguineum.
284½. aciculare.
288. lucidum.
longiligulatum.
292. amarulum.
293. tenerum.
298. virgatum.

Kearney, T. H.—Continued.
299. ashei.
300. dichotomum.
longiligulatum.
301. pseudopubescens.
sphaerocarpon.
302. villosissimum.
306. aciculare.
angustifolium.
307. wrightianum.
308. scoparium.
309. lindheimeri.
312. flexile.
320. sphaerocarpon.
324. ashei.
325. boscii.
326. ciliatum.
microcarpon.
327. commutatum.
328. huachucae silvicola.
329. dichotomum.
330. clandestinum.
lancearium.
patentifolium.
331. patulum.
331½. pauciciliatum.
336. mutabile.
verrucosum.
337. villosissimum.
342. repens.
358. rhizomatum.
363. hians.
367. dichotomum.
369. virgatum.
372. agrostoides.
anceps.
dichotomiflorum.
374. dichotomiflorum.
376. anceps.
378. gattingeri.
379. verrucosum.
380. longifolium.
380a. stipitatum.
384. dichotomum.
594. sphaerocarpon.
960. flexile.
961. philadelphicum.
962. gattingeri.
963. gattingeri.
965. anceps.
966. dichotomiflorum.
967. microcarpon.
968. sphaerocarpon.

Kearney, T. H.—Continued.
969. stipitatum.
970. xalapense.
971. villosissimum.
972. commutatum.
973. commutatum.
974. polyanthes.
1029. ashei.
1033. xalapense.
1104. xalapense.
1179. xalapense.
1307. microcarpon.
1308. xalapense.
1317. commutatum.
1369. angustifolium.
1374. dichotomum.
1375. aciculare.
1386. oligosanthes.
1393. commonsianum.
1400. oligosanthes.
1411. boscii.
1414. commutatum.
1416. angustifolium.
1447. tsugetorum.
1454. commonsianum.
1461. oricola.
1463. commutatum.
1467. xalapense.
1469. boscii.
1476. polyanthes.
1477. scoparium.
1514. roanokense.
1559. lanuginosum.
1560. sphaerocarpon.
1566. aciculare.
1748. anceps.
1761. strigosum.
1775. amarulum.
1776. commonsianum.
1798. scabriusculum.
1871. aciculare.
1899. virgatum cubense.
2018. virgatum.
2021. amarulum.
2025. longifolium.
2026. roanokense.
2038. aciculare.
2043. lanuginosum.
2053. verrucosum.
2063. amarulum.
2064. amarum.
2114. commonsianum.
2242. longifolium.

Kearney, T. H.—Continued.
2249. stipitatum.
2272. aciculare.
2317. amarum.

Kellerman, W. A.
20. praecocius.
4725. maximum.
5114. polygonatum.
5119. pilosum.
6231. viscidellum.
6236. sphaerocarpon.
6246. pulchellum.
6249. viscidellum.
6250. geminatum.
6253. paludivagum.
6254. paludivagum.
6263. trichoides.
6267. maximum.
6272. trichanthum.
6758. huachucae silvicola.
6765. capillare.
6766. latifolium.
6767. polyanthes.
6768. dichotomum.
6769. huachucae.
6778. microcarpon.
6785. huachucae.
6799. latifolium.
6799½. clandestinum.
6800. stipitatum.
6873. huachucae.
6881. commutatum.
6883. clandestinum.
6885. implicatum.
6886. barbulatum.
6887. bicknellii.
6888. clandestinum.
6890. huachucae silvicola.
6891. dichotomum.
6892. ashei.
6893. huachucae.
6894. scribnerianum.
6895. huachucae silvicola.
6899. latifolium.
6900. clandestinum.
6901. ashei.
6902. commutatum.
6903. barbulatum.

Kneucker, A., Gram. Exs.
189. capillare.
245. dichotomum.
302. virgatum.
366. molle.

Kneucker, A., Gram. Exs.—Continued.
423. latifolium.
424. clandestinum.
425. scribnerianum.
485. tennesseense.
546. dichotomiflorum.
547. perlongum.
548. depauperatum.
549. xalapense.
550. microcarpon.
551. huachucae silvicola.
552. lindheimeri.
553. sphaerocarpon.
554. polyanthes.
555. villosissimum.
556. ashei.
557. commutatum.

Leiberg, J. B.
714. barbipulvinatum.
834. barbipulvinatum.
1312. pacificum.
5732. virgatum.
5783. barbipulvinatum.
5816. bulbosum sciaphilum.
5916. hallii.

Lemmon, J. G.
353. arizonicum.
2907. huachucae.
2908. bulbosum sciaphilum.
2912. bulbosum.
2914. bulbosum.
2916. bulbosum.
2922. bulbosum sciaphilum.
3062. arizonicum.
3152. bulbosum sciaphilum.
3154. virgatum.

León, Brother.
190. diffusum.
276. reptans.
283. barbinode.
291. adspersum.
292. reptans.
296. repens.
297. reptans.
305. diffusum.
305b. distantiflorum.
335. elephantipes.
427. maximum.
557. trichanthum.
563. repens.
566. reptans.
567. distantiflorum.
568. barbinode.

León, Brother—Continued.

570.	adspersum.
573.	fasciculatum.
576.	reptans.
813.	fasciculatum.
902.	exiguiflorum.
903.	zizanioides.
906.	reptans.
907.	laxum.
908.	pilosum.
909.	laxum.
910.	reptans.
910b.	reptans.
910c.	reptans.
911.	exiguiflorum.
912.	distantiflorum.
913.	exiguiflorum.
914.	laxum.
916.	fasciculatum.
917.	distantiflorum.
918.	geminatum.
919.	dichotomiflorum.
920.	geminatum.
921.	maximum.
922.	ghiesbreghtii.
922b.	ghiesbreghtii.
923.	diffusum.
923b.	diffusum.
923c.	diffusum.
924.	adspersum.
925.	adspersum.
957.	maximum.

Liebmann, F. M.

275.	millegrana.
277.	fasciculatum.
279.	fasciculatum.
317.	trichoides.
320.	trichanthum.
323.	viscidellum.
324.	viscidellum.
327.	sphaerocarpon.
328.	xalapense.
394.	zizanioides.
405.	frondescens.
411.	pilosum.
412.	laxum.
419.	laxum.
425.	maximum in part.
428.	glutinosum.
432.	trichanthum.
441.	bulbosum.
442.	bulbosum.
450.	gouini.

Lindheimer, F.

158.	pedicellatum.
565.	lindheimeri.
728.	condensum.
733.	virgatum.
1265.	pedicellatum.

Mackenzie, K. K.

297.	leibergii.
301.	agrostoides.
460.	lucidum.
1339.	linearifolium.
1355.	oricola.
1360.	clandestinum.
1379.	tsugetorum.
1380.	polyanthes.
1381.	villosissimum.
1398.	linearifolium.
1399.	columbianum.
1405.	dichotomum.
1414.	latifolium.
1452.	depauperatum.
1459.	tennesseense.
1484.	microcarpon.
1485.	commonsianum.
1548.	barbulatum.
1605.	microcarpon.
1611.	scribnerianum.
1663.	sphaerocarpon.
1664.	aciculare.
1671.	verrucosum.
1686.	microcarpon.
1688.	scoparium.
1708.	ashei.
1709.	latifolium.
1710.	villosissimum.
1725.	amarulum.
1733.	auburne.
1736.	amarum.
1745.	polyanthes.
1794.	joorii.
1854.	scoparium.
1893.	stipitatum.
2067.	commonsianum.
2068.	columbianum.
2075.	huachucae.
2076.	tennesseense.
2093.	boreale.
2105.	columbianum.
2106.	dichotomum.
2109.	boreale.
2137.	huachucae silvicola.
2138.	annulum.
2144.	boscii.

Mackenzie, K. K.—Continued.

2155.	commonsianum.
2156.	lindheimeri.
2159.	huachucae silvicola.
2160.	lindheimeri.
2161.	microcarpon.
2163.	ashei.
2164.	lindheimeri.
2165.	commonsianum.
2166.	sphaerocarpon.
2167.	lucidum.
2168.	lindheimeri.
2169.	huachucae silvicola.
2170.	meridionale.
2195.	ashei.
2197.	huachucae silvicola.
2220.	tsugetorum.
2247.	columbianum.
2249.	huachucae silvicola.
2250.	sphaerocarpon.
2251.	werneri.
2280.	dichotomum.
2349.	lindheimeri.
2355.	agrostoides.
2366.	philadelphicum.
2404.	columbianum.
2476.	microcarpon.
2477.	meridionale.
2480.	ashei.

Macoun, J. and J. M.

135.	agrostoides.
7444.	philadelphicum.
13003.	virgatum.
13225.	capillare.
13227.	wilcoxianum.
13231.	virgatum.
21957.	werneri.
22022.	boreale.
22023.	subvillosum.
22024.	implicatum.
22025.	xanthophysum.
26236.	tsugetorum.
26316.	lindheimeri.
26317.	capillare.
26322.	depauperatum.
26324.	virgatum.
26325.	latifolium.
26326.	latifolium.
26327.	latifolium.
26328.	scribnerianum.
26329.	scribnerianum.
26330.	flexile.
26331.	flexile.

Macoun, J. and J. M.—Continued.

26332.	flexile.
26333.	scribnerianum.
26334.	huachucae silvicola.
26337.	huachucae.
26338.	lindheimeri.
29297.	scribnerianum.
29303.	virgatum.
29304.	virgatum.
29348.	agrostoides.
29349.	boreale.
29368.	subvillosum.
29369.	huachucae.
65370.	lindheimeri.
69204.	boreale.
69205.	subvillosum.
72965.	tennesseense.
73003.	leibergii.
73004.	leibergii.
77229.	occidentale.
77230.	scribnerianum.
77231.	scribnerianum.

Maxon, W. R.

550.	huachucae silvicola.
1659.	fasciculatum.
2109.	zizanioides.
2361.	fasciculatum.
2816.	glutinosum.
3153.	pulchellum.
3476.	barbinode.

Mearns, E. A.

25.	villosissimum.
738.	hirticaule.
743.	barbipulvinatum.
755.	barbipulvinatum.
756.	capillare.
758.	virgatum.
767.	hirticaule.
769.	virgatum.
771.	scribnerianum.
773.	obtusum.
788.	barbipulvinatum.
791.	latifolium.
793.	virgatum.
925.	obtusum.
1072.	arizonicum.
1130.	obtusum.
1845.	obtusum.
1905.	hirticaule.
1932.	bulbosum sciaphilum.
2093.	hirticaule.
2294.	hirticaule.
2308.	obtusum.

Mearns, E. A.—Continued.
2501. bulbosum.
3061. thermale.
4050. thermale.
4166. thermale.
4203. thermale.
4789. thermale.
4870. thermale.
4983. thermale.
5064. thermale.
5110. thermale.
5134. thermale.

Merrill, E. D.
2. implicatum.
7. implicatum.
8. implicatum.
9. implicatum.
11. xanthophysum.
16. implicatum.
43. barbipulvinatum.
152. barbipulvinatum.
157. thermale.
164. thermale.
165. thermale.
197. microcarpon.
198. clandestinum.
199. polyanthes.
202. boscii molle.
203. boscii molle.
204. commutatum.
233. scoparium.
1243. latifolium.

Metcalfe, O. B.
6. plenum.
80. bulbosum.
plenum.
354. helleri.
357. bulbosum sciaphilum.
434. barbipulvinatum.
738. plenum.
739. plenum.
749. obtusum.
768. arizonicum.
807. hallii.
1294. arizonicum.
1422. bulbosum.
1442. hirticaule.

Millspaugh, C. F.
126. dichotomiflorum.
324. barbinode.
454. maximum.
702. utowanaeum.
726. reptans.

Millspaugh, C. F.—Continued.
727. barbinode.
1859. pilosum.
2182. caerulescens.

Morong, T.
317. trichanthum.
405a. glutinosum.
441. polygonatum.
519. parvifolium.
534. laxum.
536. zizanioides.
537. laxum.
543. dichotomiflorum.
779a. barbinode.
813. megiston.
977. laxum.
1001. zizanioides.
1002. dichotomiflorum.
elephantipes.
1072. megiston.
1571. trichanthum.
1574. laxum.

Morris, E. L.
9. huachucae.
48. huachucae silvicola.
53. virgatum.
55. implicatum.
124. virgatum.
135. villosissimum.
171. capillare.
226. capillare.
240. pseudopubescens.
tsugetorum.
252. capillare.
287. dichotomiflorum.
294. virgatum.
977. ashei.
984. lindheimeri.
1139. microcarpon.
1186. polyanthes.
1193. microcarpon.
1193a. dichotomum.
1283. philadelphicum.

Nash, G. V.
15. pauciciliatum.
36. malacon.
45. equilaterale.
commutatum.
50. patulum.
51. chamaelonche.
52. patentifolium.
63. malacon.
pauciciliatum.

Nash, G. V.—Continued.

71.	chamaelonche.
72.	patentifolium.
75.	ovale.
78.	commutatum.
103.	ovale.
132.	malacon.
147.	ovale.
151.	patulum.
213.	hians.
239.	laxiflorum.
240.	commutatum.
	joorii.
273.	vernale in part.
287.	tsugetorum.
301.	lancearium.
302.	commutatum.
334.	leucothrix.
335.	chamaelonche.
337.	lucidum.
372.	dichotomiflorum.
375.	lanuginosum.
376.	nitidum.
424.	vernale.
466.	lancearium.
467.	leucothrix.
500.	lucidum.
598.	arenicoloides.
603.	malacon.
628.	malacon.
745.	hemitomon.
746.	paludivagum.
778.	chamaelonche.
780.	verrucosum.
781.	webberianum.
807.	ciliatum.
874.	dichotomiflorum.
925.	albomarginatum.
1012.	erectifolium.
1117.	patulum.
1118.	ovale.
1119.	commutatum.
1120.	equilaterale.
1226.	fusiforme.
1238.	chamaelonche.
1243.	aciculare.
1337.	pauciciliatum.
1338.	leucothrix.
1436.	arenicoloides.
1507.	curtifolium.
1518.	ovale.
1674.	equilaterale.
1675.	commutatum.
1694.	agrostoides.

Nash, G. V.—Continued.

1713.	rhizomatum.
1730.	maximum.
1856.	fusiforme.
1857.	ovale.
2034.	laxiflorum.
2075.	leucothrix.
2076.	pauciciliatum.
2156.	laxiflorum.
2204.	scoparium.
2249.	tenerum.
2258.	rhizomatum.
2329.	boscii.
2500.	sphagnicola.
2522.	microcarpon.
2529.	anceps.

Nelson, A.

516.	scribnerianum.
2524.	scribnerianum.
3626.	virgatum.
6037.	thermale.
6174.	thermale.
8346.	barbipulvinatum.
8360.	virgatum.

Nelson, E.

330.	virgatum.
476.	virgatum.
481.	barbipulvinatum.
4984.	barbipulvinatum.

Nelson, E. W.

201.	xalapense.
1374.	bulbosum.
1622.	reptans.
2874.	fasciculatum.
2958.	fasciculatum.
2975.	virgatum.
3023.	zizanioides.
3056.	pilosum.
3357.	glutinosum.
3781.	biglandulare.
3908.	obtusum.
4257.	trichoides.
6187.	bulbosum.
6297.	hirticaule.
6298.	bulbosum sciaphilum.
6301.	bulbosum.
6352.	obtusum.
6355.	hirticaule.

Palmer, E.

1b in 1885.	arizonicum.
	hirticaule.
1c in 1885.	sonorum.
14 in 1897.	hirticaule.

Palmer, E.—Continued.

15 in 1869.	geminatum.
19 in 1897.	fasciculatum.
143 in 1897.	hirticaule.
145 in 1897.	hirticaule.
149 in 1897.	molle.
152 in 1904.	fasciculatum chartaginense.
158 in 1887.	fasciculatum.
159 in 1887.	arizonicum.
159 in 1887.	fasciculatum chartaginense.
168a in 1887.	stramineum.
175 in 1896.	obtusum.
206 in 1887.	stramineum.
207 in 1886.	bulbosum. virgatum.
207 in 1887.	fasciculatum.
207a in 1886.	bulbosum.
208 in 1887.	hirticaule.
241 in 1897.	fasciculatum.
249 in 1897.	hirticaule.
250 in 1897.	arizonicum.
251 in 1897.	hirticaule.
266 in 1904.	obtusum.
287 in 1895.	trichoides.
289 in 1894.	geminatum.
340 in 1906.	bulbosum.
346 in 1887.	hirticaule.
348 in 1906.	bulbosum sciaphilum.
349 in 1906.	bulbosum sciaphilum.
370 in 1868.	obtusum.
375 in 1868.	dichotomiflorum.
376 in 1868.	virgatum.
380 in 1868.	anceps.
381 in 1868.	hians.
382 in 1868.	helleri.
383 in 1868.	malacophyllum.
384 in 1868.	lindheimeri.
394 in 1898.	obtusum.
412 in 1907.	fasciculatum chartaginense.
429 in 1886.	paludivagum.
467 in 1896.	bulbosum sciaphilum.
469 in 1906.	bulbosum. bulbosum sciaphilum.
510 in 1886.	virgatum.
525 in 1896.	lepidulum.
525a in 1896.	bulbosum.

Palmer, E.—Continued.

533 in 1906.	lepidulum.
554 in 1906.	bulbosum sciaphilum.
554 in 1907.	hallii.
561 in 1890.	scribnerianum.
590 in 1898.	obtusum.
631 in 1874.	lancearium.
632 in 1874.	lucidum.
633 in 1874.	sphagnicola.
634 in 1874.	breve. chamaelonche.
690 in 1887.	geminatum.
690 in 1890.	hirticaule.
694 in 1890.	fasciculatum.
695 in 1890.	hirticaule.
741 in 1896.	plenum.
750 in 1890.	hirticaule.
947 in 1889.	sonorum.
1078 in 1890.	barbinode.
1083 in 1890.	trichoides.
1151 in 1879.	trichanthum.
1257 in 1891.	trichanthum.
1338 in 1880.	hallii.
1538 in 1891.	stramineum.
1539 in 1891.	sonorum.
1544 in 1891.	hirticaule.
1545 in 1891.	hirticaule.
1554 in 1891.	hirticaule. sonorum.
1557 in 1891.	fasciculatum.
1558 in 1891.	laxum.
1659 in 1891.	parcum.
1660 in 1891.	molle.
1758 in 1891.	trichoides.
2649 in 1892.	barbipulvinatum.
2709 in 1892.	barbipulvinatum.

Palmer, W., and Riley, J. H.

178.	maximum.
213.	strigosum.
377.	maximum.
447.	acuminatum.
481.	chrysopsidifolium.
542.	maximum.
545.	maximum.
746.	adspersum.
771.	adspersum.
802.	diffusum.
816.	maximum.
982.	chrysopsidifolium.
989.	acuminatum.
990.	polycaulon.
1065.	viscidellum.

Palmer, W., and Riley, J. H.—Cont'd.
1069. laxum.
1083. acuminatum.
1086. cayennense.
1134. virgatum cubense.

Parish, S. B.
263. pacificum.
887. urvilleanum.
1081. barbipulvinatum.
1663. pacificum.

Parlin, J. C.
751. agrostoides.
938. languidum.
1029. boreale.
1181. huachucae silvicola.
1186. huachucae.
1187. boreale.
1188. implicatum.
1189. huachucae.
1190. werneri.
1191. latifolium.
1196. columbianum.
1198. implicatum.
1215. tsugetorum.
1266. dichotomum.
1423. boreale.
1502. werneri.
1577. tsugetorum.
1581. subvillosum.
1607. lindheimeri.
1701. boreale.
1738. boreale.
1744. boreale.
1776. philadelphicum.
1806. werneri.
1957. depauperatum.
1971. linearifolium.
2000. implicatum.
2001. subvillosum.
2013. boreale.
2016. subvillosum.
2017. tennesseense.
2034. boreale.

Pittier, H.
101. paludivagum.
257. strigosum.
361. laxum.
364. stoloniferum.
521. laxum.
553. laxum.
665. laxum.
932. acuminatum.
940. viscidellum.

Pittier, H.—Continued.
971. trichoides.
982a. acuminatum.
1617. maximum.
1621. trichoides.
1800. strigosum.
1805a. albomarginatum.
1805b. arenicoloides.
1960. maximum.

Pollard, C. L.
16. dichotomum.
92. clandestinum.
180. ashei.
323. barbulatum.
324. dichotomum.
337. villosissimum.
338. depauperatum.
353. meridionale.
362. microcarpon.
365. clandestinum.
398. sphaerocarpon.
401. polyanthes.
403. lucidum.
406. microcarpon.
408. microcarpon.
412. boscii molle.
523. tennesseense.
595. virgatum.
682. dichotomiflorum.
1106. rhizomatum.
1152. repens.
1201. virgatum cubense.
1228. anceps.

Pringle, C. G.
7. plenum.
26. barbinode.
73. reptans.
74. fasciculatum.
124. fasciculatum.
376. hallii.
377. bulbosum.
379. fasciculatum chartaginense.
380. fasciculatum chartaginense.
465. arizonicum.
476. obtusum.
487. arizonicum.
497. lepidulum.
1124. havardii.
1415. vaseyanum.
1406. bulbosum sciaphilum.
2377. ramisetum.

Pringle, C. G.—Continued.

3336.	paludivagum.
3449.	cupreum.
3817.	schmitzii.
3828.	trichoides.
5203.	albomaculatum.
5207.	bulbosum.
5569.	gouini.
5573.	hirsutum.
6322.	elephantipes.
6418.	bulbosum.
7882.	multirameum.
7883.	sphaerocarpon.
8083.	xalapense.
8089.	viscidellum.
8195.	longum.
8323.	ramisetum.
8339.	multirameum.
	olivaceum.
8344.	sphaerocarpon.
9209.	multirameum.
9210.	multirameum.
9556.	paludivagum.
9575.	bulbosum.
9577.	elephantipes.
13250.	xalapense.

Purpus, C. A.

2156.	glutinosum.
2159.	laxum.
2160.	laxum.
	viscidellum.
2902.	trichoides.
2903.	glutinosum.
2908.	bulbosum.
3774.	maximum.

Reverchon, J.

22.	virgatum.
32.	virgatum.
88.	geminatum.
92.	ovinum.
93.	xalapense.
99.	hians.
103.	agrostoides.
106.	anceps.
1074.	helleri in part.
1075.	huachucae silvicola.
1078.	geminatum.
1079.	obtusum.
1083A.	agrostoides.
1086.	fasciculatum chartaginense.
1087.	ovinum.
1096.	reverchoni.
1226.	texanum.

Reverchon, J.—Continued.

1620.	pedicellatum.
1622.	virgatum.
1682.	hallii.
1831.	malacophyllum.
1840.	oligosanthes.
1841.	oligosanthes.
1842.	philadelphicum.
1884.	lanuginosum.
2222.	agrostoides.
2223.	brachyanthum.
2224.	brachyanthum.
2228.	texanum.
2235.	gymnocarpon.
2341.	hemitomon.
2342.	helleri.
2344.	helleri.
2345.	helleri.
2357.	lindheimeri.
2368.	condensum.
2390.	ravenelii.
2444.	helleri.
2844.	virgatum.
2855.	helleri.
3526.	filipes.
4136.	villosissimum.
4137.	ovinum.
4138.	helleri.
4142.	oligosanthes.
4143.	commutatum.
4144b.	boscii.
4147.	barbulatum.
4155.	dichotomum.
4156.	consanguineum.
4158.	dichotomum.
4159.	angustifolium.
4163.	thurowii.
4193.	angustifolium.
4194.	microcarpon.

Ricker, P. L.

666.	huachucae silvicola.
908.	tenerum.
933.	rhizomatum.
936.	virgatum cubense.
943.	equilaterale.
945.	patentifolium.
952.	adspersum.
962.	rhizomatum.
963.	patentifolium in part.
975.	capillare.
1153.	commutatum.
1277.	implicatum.
1277½.	subvillosum.
1309.	dichotomum.

Ricksecker, A. E.
66. adspersum.
77. reptans.
200. maximum.
212. geminatum.
300. barbinode.
317. fasciculatum.
384. adspersum.
413. maximum.

Riedel, L.
52. laxum.
53. maximum.
958. parvifolium.
959. dichotomiflorum.
1239. megiston.
1360. trichanthum.

Rose, J. N.
1834. fasciculatum.
1878. stramineum.
1883. stramineum.
1884. fasciculatum.
1889. stramineum.
1999. bulbosum.
2053. bulbosum sciaphilum.
2280. arizonicum.
2609. bulbosum.
3281. stramineum.
3351. hirticaule.
3361. bulbosum.

Rovirosa, J. N.
427. laxum.
434. trichoides.
497. frondescens.
532. megiston.
598. trichoides.
599. pilosum.
624. zizanioides.

Rugel, F.
123. geminatum.
142. consanguineum.
184. albomarginatum.
229. erectifolium.
231. hians.
290. neuranthum.
291. lancearium.
347. hemitomon.
351. joorii.
376. lancearium.
377. chamaelonche.
378. joorii.
392. xalapense.
394. chapmani.
443. webberianum.

Rugel, F.—Continued.
444. amarulum.
595. virgatum.
598. verrucosum.
599. gymnocarpon.

Rusby, H. H.
22. laxum.
199. polygonatum in part.
210. laxum.
pilosum.
212. pilosum.
217. pulchellum.
228. laxum.
229. frondescens.
233. millegrana.
236. laxum.
244. glutinosum.
444. pampinosum.
445. virgatum.
445b. bulbosum.
445c. bulbosum sciaphilum in part.
864. obtusum.
866. bulbosum sciaphilum.
8921. obtusum.

Rusby, H. H., **and Squires**, R. W.
79. pilosum.
347. pilosum.
355. megiston.
362. rudgei.

Ruth, A.
1. sphaerocarpon.
5. polyanthes.
6. sphaerocarpon.
7. polyanthes.
11. commutatum.
15. polyanthes.
19. villosissimum.
21. sphaerocarpon.
56. angustifolium.
57. microcarpon.
59. capillare.
gattingeri.
60. clandestinum.
61. commutatum.
63. depauperatum.
64. microcarpon.
65. agrostoides.
66. flexile.
68. xalapense.
69. polyanthes.
70. boscii molle.
71. dichotomiflorum.

RUTH, A.—Continued.
72. villosissimum in part.
75. sphaerocarpon.
76. virgatum.

RYDBERG, P. A.
1096. barbipulvinatum.
1097. virgatum.
1098. scribnerianum.
1099. huachucae.
1100. perlongum.
1279. scribnerianum.
1308. wilcoxianum.
1368. huachucae.
1493. scribnerianum.
1538. barbipulvinatum.
1561. virgatum.
1604. scribnerianum.
1788. barbipulvinatum.
2011. barbipulvinatum.
2351. barbipulvinatum.
2505. barbipulvinatum.
2508. virgatum.
2512. virgatum.
2516. virgatum.

SCHAFFNER, S. W.
138. sphaerocarpon.
146. pseudopubescens.
148. obtusum.
284. viscidellum.
285. sphaerocarpon.
1037. sphaerocarpon.

SHEAR, C. L.
85. scribnerianum.
152. barbipulvinatum.
223. virgatum.
264. barbipulvinatum.
436. barbipulvinatum.
606. virgatum.
755. barbipulvinatum.
756. virgatum.
767. virgatum.
819. virgatum.
965. barbipulvinatum.
975. obtusum.
980. virgatum.

SINTENIS, P.
51. maximum.
160. trichoides.
355. acuminatum.
357. glutinosum.
360. laxum.
847. reptans.
938. elephantipes.
1216. parvifolium.

SINTENIS, P.—Continued.
1224. acuminatum in part.
1254. laxum.
1901. fasciculatum.
1957. adspersum.
2468. maximum.
2471. trichanthum.
2609. glutinosum.
3365. utowanaeum.
3366. maximum.
3367. geminatum.
3368. reptans.
3416. utowanaeum.
3463. utowanaeum.
3647. fasciculatum.
4983. ghiesbreghtii.
5719. parvifolium.
5724. polycaulon.
5908. acuminatum.
5985. chrysopsidifolium.

SMALL, J. K., AND HELLER, A. A.
201. commutatum.
204. scoparium.
205. hians.
279. depauperatum.
348. clandestinum.
394. latifolium.
463. polyanthes.
480. dichotomum.

SMITH, H. H.
151. geminatum.
167. trichoides.
169. zizanioides.
173. reptans.
202. laxum.
203. pilosum.
204. laxum.
206. polygonatum.
211. barbinode.
589. pulchellum.
1409. maximum.
2146. millegrana.
2151. trichanthum.
2153. maximum.
2190. polygonatum.

SOMES, M. P.
25. praecocius.
153. tennesseense.
167. scribnerianum.
189. virgatum.
207. huachucae silvicola.
210. huachucae.
219. virgatum.
229. scribnerianum.

Somes, M. P.—Continued.
230. huachucae silvicola.
231. clandestinum.
232. microcarpon.
236. leibergii.
245. perlongum.
246. praecocius.

Spruce, R.
93. rudgei.
466. trichoides.
603. millegrana.
632. parvifolium.
706. zizanioides.
1289. stenodes.
2207. parvifolium.
2344. zizanioides.

Suksdorf, W. N.
124. pacificum.
2330. hirticaule.
5162. occidentale.
5174. occidentale.
6292. pacificum.

Thieme, C.
195. fasciculatum.
532. virgatum.
781. polygonatum.
5578. polygonatum.
5584. fasciculatum.
5587. laxum.
pilosum.
polygonatum.
trichanthum.

Tidestrom, I.
4. ashei.
5. tennesseense.
22. barbipulvinatum.
48. huachucae silvicola.
2482. barbipulvinatum.
2636. pacificum.

Tracy, S. M.
3. boscii.
13. sphaerocarpon.
26. tenerum.
29. joorii.
38. repens.
42. scribnerianum.
43. leucothrix.
44. ensifolium.
47. sphaerocarpon.
77. dichotomiflorum.
91. spretum.
95. lucidum.
120. joorii.
161. villosissimum.

Tracy, S. M.—Continued.
162. ciliatum.
192. barbipulvinatum.
433. sphaerocarpon.
434. urvilleanum.
459. arenicoloides.
459a. arenicoloides.
912. virgatum.
1410. xalapense.
1416. commutatum.
1417. aciculare.
1418. hians.
1478. xalapense strictirameum.
1535. anceps.
1730. angustifolium.
1733. microcarpon.
1735. lanuginosum.
1751. huachucae silvicola.
1752. scribnerianum.
1753. xalapense.
1754. oligosanthes.
1755. dichotomum.
1837. reptans.
1883. angustifolium.
1884. consanguineum.
1888. angustifolium.
2027. flavovirens.
2028. dichotomum.
2031. nitidum.
2032. xalapense.
2036. agrostoides.
2050. dichotomum.
2058. xalapense.
2854. amarum.
2856. lanuginosum.
2859. neuranthum.
2861. wrightianum.
2862. sphaerocarpon inflatum.
2863. pauciciliatum.
2865. trifolium.
2867. lanuginosum.
2869. lancearium.
2873. consanguineum.
3190. huachucae.
3198. huachucae silvicola.
3204. dichotomum.
3205. boscii molle.
3207. microcarpon.
3208. huachucae silvicola.
3209. dichotomum.
3211. xalapense.
3223. huachucae silvicola.
3224. microcarpon.
3225. microcarpon.

Tracy, S. M.—Continued.
3228. nitidum.
3238. polyanthes.
3252. boscii.
3253. dichotomum.
3255. xalapense.
3256. xalapense.
3265. lindheimeri.
3266. joorii.
3267. xalapense.
3268. ashei.
3272. villosissimum.
3273. dichotomum.
3275. ashei.
3285. lindheimeri.
3287. xalapense.
3296. commutatum.
sphaerocarpon.
3306. scoparium.
3316. polyanthes.
3318. joorii.
3334. trifolium.
3387. joorii.
3388. microcarpon.
3388a. microcarpon.
3603. rhizomatum.
3604. virgatum.
3614. fusiforme.
3615. lindheimeri.
3616. dichotomum.
3617. ovale.
3618. microcarpon.
3619. sphaerocarpon inflatum.
3620. lanuginosum.
3622. lanuginosum.
3623. microcarpon.
3624. microcarpon.
3625. dichotomum.
roanokense.
3626. rhizomatum.
3627. longifolium.
3629. ashei.
commutatum.
3630. commutatum.
3631. polyanthes.
3633. consanguineum.
3634. aciculare.
3635. angustifolium.
fusiforme.
3636. angustifolium.
3637. aciculare.
3638. aciculare.
3639. aciculare.

Tracy, S. M.—Continued.
3640. aciculare.
3641. aciculare.
3642. sphaerocarpon inflatum.
3643. scabriusculum.
3644. wrightianum.
3645. lanuginosum.
3646. mutabile.
3647. oligosanthes.
3649. dichotomum.
3650. aciculare.
3651. angustifolium.
3653. villosissimum.
3655. joorii.
3656. sphaerocarpon inflatum.
3657. angustifolium.
3658. villosissimum.
3660. virgatum.
3661. consanguineum.
3746. angustifolium.
3747. ashei.
3748. curtifolium in part.
3749. lucidum.
3750. angustifolium.
3751. villosissimum.
3752. curtifolium.
3753. villosissimum.
3754. villosissimum.
3756. ashei.
3757. dichotomum.
3758. angustifolium.
villosissimum.
3759. xalapense.
3760. polyanthes.
3761. microcarpon.
3762. virgatum.
virgatum cubense.
3763. virgatum.
3858. longifolium.
3859. longifolium.
3860. longifolium.
3861. repens.
3889. lindheimeri.
huachucae silvicola.
3976. patulum.
3978. scoparium.
4562. verrucosum.
4563. longifolium.
4564. rhizomatum.
4565. virgatum.
4566. gouini.
4567. neuranthum.
4568. combsii in part.

Tracy, S. M.—Continued.

4569.	scabriusculum.
4573.	commutatum.
	mutabile.
4574.	xalapense.
4576.	sphaerocarpon.
4577.	commutatum in part.
4578.	angustifolium.
4579.	angustifolium.
4580.	lanuginosum.
4581.	lancearium in part.
4582.	ciliatum.
4583.	trifolium.
4584.	roanokense.
4585.	spretum.
4586.	patulum.
4587.	patulum.
4588.	xalapense.
4591.	nitidum.
4592.	roanokense.
4593.	sphaerocarpon inflatum.
4594.	spretum.
4595.	microcarpon.
4596.	erectifolium.
4597.	sphaerocarpon.
4598.	curtifolium.
4599.	curtifolium.
4601.	trifolium.
4603.	trifolium.
4604.	sphaerocarpon.
4605.	lanuginosum.
	albomarginatum.
4606.	polycaulon.
4607.	sphaerocarpon.
4609.	nitidum.
	microcarpon.
4610.	chamaelonche.
4611.	wrightianum.
4612.	trifolium.
4614.	consanguineum.
4615.	angustifolium.
4616.	angustifolium.
	ovinum.
4617.	scabriusculum.
4618.	dichotomiflorum.
4619.	rhizomatum.
4620.	anceps.
4621.	rhizomatum.
4622.	sphaerocarpon inflatum.
6350.	patentifolium.
6358.	xalapense.
6444.	condensum.
6446.	pauciciliatum.

Tracy, S. M.—Continued.

6447.	pauciciliatum.
6451.	chamaelonche.
6452.	lancearium.
6455.	fasciculatum.
6458.	sphaerocarpon inflatum.
6460.	equilaterale.
6464.	chamaelonche.
6465.	lancearium.
6466.	lancearium.
6469.	lanuginosum.
6470.	polycaulon.
6471.	sphaerocarpon inflatum.
6507.	dichotomiflorum.
6507a.	longifolium.
6508.	amarulum.
6691.	bartowense.
6692.	polycaulon.
6693.	chamaelonche.
6694.	xalapense.
6695.	commutatum.
6698.	polycaulon.
6699.	vernale.
6700.	malacon.
6701.	patulum.
6702.	patentifolium.
6703.	patulum.
6707.	laxiflorum.
6708.	fusiforme.
6710.	fusiforme.
	polycaulon.
6711.	neuranthum.
6713.	fusiforme.
	equilaterale.
6713a.	fusiforme.
6714.	lancearium.
6715.	glabrifolium.
6716.	webberianum.
6723.	polycaulon.
6725.	malacon.
6726.	chamaelonche.
6727.	polycaulon.
6729.	patulum.
6730.	lancearium.
6731.	hemitomon.
6732.	chamaelonche.
6733.	albomarginatum.
6736.	lindheimeri.
7008.	hians.
7018.	microcarpon.
7029.	trifolium.
7048.	scoparium.
7050.	equilaterale.

Tracy, S. M.—Continued.

7051.	equilaterale.
	lancearium.
7093.	rhizomatum.
7105.	rhizomatum.
7163.	fusiforme.
7166.	neuranthum.
7167.	equilaterale.
7170.	nitidum.
7174.	patentifolium.
7175.	lancearium.
7176.	neuranthum.
7180.	vernale.
7186.	webberianum.
7188.	flavovirens.
	polycaulon.
7189.	albomarginatum.
7191.	chamaelonche.
7193.	leucothrix.
	longiligulatum.
7194.	lancearium.
7195.	lancearium.
7198.	patulum.
7199.	nitidum.
7200.	chamaelonche.
7202.	xalapense.
7203.	lancearium.
7205.	lancearium.
7207.	chamaelonche.
7208.	polycaulon.
7209.	lancearium.
7371.	fusiforme.
7381.	geminatum.
7382.	commutatum.
7383.	laxiflorum.
7387.	reptans.
7392.	geminatum.
7400.	gymnocarpon.
7402.	sphaerocarpon.
7405.	rhizomatum.
7409.	capillare.
7412.	paludivagum.
7651.	agrostoides.
7738.	bartowense.
7740.	bartowense.
7745.	hians.
7748.	texanum.
7753.	gouini.
7763.	barbinode.
7935.	obtusum.
7939.	reverchoni.
7940.	reverchoni.
7941.	hallii.
7942.	malacon.

Tracy, S. M.—Continued.

7943.	praecocius.
	villosissimum.
7944.	lindheimeri.
7945.	hallii.
7946.	sphaerocarpon.
7947.	lindheimeri.
7948.	reverchoni.
7949.	helleri.
7950.	hallii.
7952.	hallii.
7953.	hallii.
7954.	hallii.
7955.	ciliatissimum.
7958.	ramisetum.
8029.	yadkinense.
8200.	hallii.
8224.	plenum.
8229.	ramisetum.
8289.	fasciculatum chartaginense.
8290.	texanum.
8295.	barbipulvinatum.
8396.	gymnocarpon.
8397.	pauciciliatum.
8398.	longiligulatum.
8399.	lanuginosum.
8400.	sphaerocarpon inflatum.
8401.	caerulescens.
8402.	strigosum.
8403.	barbulatum.
8405.	lucidum.
8406.	pauciciliatum.
8407.	chamaelonche.
8408.	combsii.
8409.	lancearium.
8410.	leucothrix.
8411.	polycaulon.
8412.	pauciciliatum.
8413.	longiligulatum.
8414.	anceps.
8415.	villosissimum.
8416.	lanuginosum
8417.	microcarpon
8418.	polyanthes.
8419.	helleri.
8420.	aciculare.
8421.	curtifolium.
8422.	strigosum.
8423.	longiligulatum.
8424.	mutabile.
8425.	lancearium.
8426.	pseudopubescens.
	villosissimum.

Tracy, S. M.—Continued.

8427.	consanguineum.
8428.	equilaterale.
8429.	wilmingtonense.
8430.	auburne in part.
8431.	nudicaule.
8432.	nudicaule.
8433.	spretum.
8504.	lucidum.
8591.	scoparium.
8847.	hemitomon.
8849.	xalapense.
8850.	nitidum.
8853.	patulum.
8859.	villosissimum.
8864.	trifolium.
8865.	microcarpon.
8866.	commutatum.
8867.	xalapense.
8868.	boscii molle.
8869.	villosissimum.
8870.	helleri.
8879.	ramisetum.
8885.	helleri.
8908.	filipes.
9054.	laxum.
9055.	dichotomiflorum.
9060.	parvifolium.
9062.	laxum.
9063.	pilosum.
9068.	ghiesbreghtii.
9072.	laxum.
9073.	cayennense.
9074.	fusiforme.
9075.	exiguiflorum.
9078.	acuminatum.
9079.	parvifolium.
9080.	tenerum.
9082.	diffusum.
9089.	utowanaeum.
9091.	fasciculatum.
9098.	millegrana.
9099.	laxum.
9102.	adspersum.
9103.	reptans.
9109.	adspersum.
9111.	diffusum.
9114.	laxum.
9116.	ghiesbreghtii.
9137.	sphaerocarpon.
9138.	lanuginosum.
9139.	patentifolium.
9140.	malacon.

Tracy, S. M.—Continued.

9141.	commonsianum.
9142.	joorii.
9143.	lancearium.
9144.	arenicoloides.
9338.	hallii.
9342.	dichotomiflorum.

Tuerckheim, H. von.

56.	multirameum.
	sphaerocarpon.
428.	olivaceum.
657.	millegrana.
1254.	laxum.
II. 1956.	biglandulare.
7699.	zizanioides.
7700.	zizanioides.
7702.	pulchellum.
7797.	polygonatum.
7798.	trichanthum.
7799.	barbinode.
7801.	trichoides.
8617.	barbinode.
8783.	millegrana.
8784.	millegrana.
8785.	zizanioides.
8790.	paludivagum.
8794.	pulchellum.
8795.	polygonatum.
8796.	zizanioides.
8797.	pilosum.
8803.	laxum.

Umbach, L. M.

1080.	pseudopubescens
1087.	meridionale.
1657.	depauperatum.
1669.	leibergii.
1670.	perlongum.
1685.	pseudopubescens.
1704.	scribnerianum.
1789.	dichotomum.
1791.	latifolium.
1799.	spretum.
1800.	meridionale.
1816.	huachucae.
1820.	huachucae silvicola.
1922.	virgatum.
2153.	sphaerocarpon.
2155.	meridionale.
2237.	huachucae.
2242.	lindheimeri.
2244.	huachucae.
2353.	lindheimeri.
2363.	miliaceum.

Umbach, L. M.—Continued.

2365.	scribnerianum.
2543.	flexile.
2646.	villosissimum.
3686.	scoparioides.
4962.	lucidum.

Wetherby, A. G.

18.	lindheimeri.
19.	dichotomiflorum.
21.	gattingeri.
32.	clandestinum.
51.	lindheimeri.
53.	latifolium.
58.	ashei.
59.	commutatum.
64.	villosissimum.

Wilcox, T. E.

13.	virgatum.
15.	virgatum.
22.	latifolium.
27.	dichotomiflorum.
41.	latifolium.
54.	virgatum.
100.	virgatum.

Williams, T. A.

1.	sphaerocarpon.
2.	sphaerocarpon.
3.	ashei.
4.	ashei.
5.	villosissimum.
6.	dichotomum.
7.	clandestinum.
8.	dichotomum.
9.	dichotomum.
10.	ashei.
	philadelphicum.
12.	philadelphicum.
2184.	capillare.
2228.	leibergii.
2577.	scribnerianum.
2847.	barbipulvinatum.
3009.	scribnerianum.
3061.	virgatum.
3089.	amarum.
3090.	amarulum.
3097.	auburne.
3098.	sphaerocarpon.
3099.	aciculare.
3100.	augustifolium.
3105.	auburne.
3110.	oligosanthes.

Wilson, P.

8.	polyanthes.
14.	xalapense.
27.	boscii molle.
31.	ravenelii.
47.	ravenelii.
125.	microcarpon.
137.	microcarpon.
179.	dichotomum.
188.	trichoides.
283.	trichoides.
511.	diffusum.
512.	adspersum.
593.	fasciculatum.
1248.	dichotomiflorum.
1249.	capillare.
1405.	diffusum.

Wooton, E. O.

64.	obtusum.
303.	barbipulvinatum.
368.	bulbosum.
1068.	obtusum.
1071.	barbipulvinatum.
2001.	virgatum.
2014.	pampinosum.
2017.	plenum.
2936.	virgatum.
2948.	barbipulvinatum.

Wright, C.

280.	ravenelii.
753.	trichanthum.
757.	glutinosum.
758.	ghiesbreghtii.
759.	laxum.
761.	geminatum.
786.	plenum.
792.	reverchoni.
797.	fasciculatum chartaginense.
1317.	dichotomiflorum.
2084.	pampinosum.
2085.	lindheimeri.
2086.	bulbosum sciaphilum.
2088.	lindheimeri.
2092.	obtusum.
3450.	exiguiflorum.
3451.	pilosum.
3452.	utowanaeum.
3453.	chrysopsidifolium.
	fusiforme.
	neuranthum.

Wright, C.—Continued.

3454.	fusiforme in part.
3455.	millegrana.
3456.	dichotomiflorum.
3458.	parvifolium.
3460.	lancearium. leucothrix.
3462.	erectifolium. millegrana.
3463.	albomarginatum.
3463.	caerulescens. wrightianum.
3466.	zizanioides.
3467.	scoparium.
3751.	laxum.
3852.	diffusum.
3855.	millegrana.
3857.	reptans.

Wright, C.—Continued.

3860.	dichotomiflorum. diffusum.
3861.	dichotomiflorum.
3862.	condensum in part.
3863.	laxum in part.
3865.	cayennense.
3869.	adspersum.
3870.	tenerum in part.
3871.	stenodes.
3872.	megiston.
3873.	virgatum cubense.
3874.	acuminatum.
3875.	polycaulon. strigosum.
3876.	pauciciliatum.
3877.	diffusum.

INDEX.

[Page number of principal entries in bold-face type. Synonyms in italics.]

Page.
- Agrostis *composita* 100
  - *nigrescens* 115
  - *nutans* 107
  - *polystachya* 100
  - *purpurascens* 102
- Agrostoidia 99
- Aira *incompleta* 118
- American Code of Botanical Nomenclature 5, 14, 15
- Angustifolia 165
- Ashe, W. W., herbarium of 2
- Axonopus 18
- Barbey, William, herbarium of 3
- Beauvois, limitation of genus Panicum by 14
- Berlin, herbaria at 2
- Bernhardi Herbarium 2
- Bicknelliana 176
- Biltmore Herbarium 1
- Boissier Herbarium 3
- Bonpland, types of 4
- Bosc, collections of 3
- Brachiaria 18
  - *digitarioides* 323
  - *obtusa* 321
  - *prostrata* 36
- British Museum, herbaria at 3
- Broom-corn millet 69
- Brussels, herbarium at 3
- Buckley, collections of 1
- Capillaria 54
- Capriola dactylon 13
- Cavanilles, types of 3
- Cenchrus *alopecuroides* 12
- Chaetochloa glauca 12, 15
  - italica 11, 12, 13, 15
  - verticillata 11
  - viridis 11, 12, 13
- Chapman, types of 1
- Citation of specimens 8
- Coleataenia 16
- Colorado grass 47
- Columbiana 240
- Columbia University Herbarium 1
- Commutata 300
- Copenhagen, herbarium at 3
- Cosson Herbarium 4
- De Candolle Herbarium 3
- Delessert Herbarium 3
- Depauperata 151
- Desfontaines Herbarium 3
- Desvaux, duplicate types of 3
  - types of 4
- Dichanthelium 17, 142
- Dichotoma 179
- Dichotomiflora 47
- Diffusa 71

Page.
- *Digitaria affinis* 30
  - *appressa* 30
  - *sanguinalis* 15
- Distribution, maps illustrating 10
  - geographical, of genus Panicum in North America 8
- Doell, types of 3
- Doubtful species 329
- Drake de Castillo, herbarium of 4
- *Eatonia purpurascens* 87
- Echinochloa colona 31
  - crusgalli 11, 12, 13
- Echinolaena 16
- Elliott Herbarium 2
- Engelmann Herbarium 2
- Ensifolia 258
- Eriochloa *pulchella* 123
- Fasciculata 35
- Festuca obtusa 118
- Field Museum Herbarium 1
- Florence, herbarium at 3
- Fournier, types of 3, 4
- Franqueville Herbarium 4
- Fries, South American collections of 4
- Galeotti, Mexican collections of 3
- Gastridium lendigerum 11
- Gattinger Herbarium 2
- Geminata 30
- Genera excluded from Panicum 16
- Geneva, herbaria at 3
- Geographical distribution of the genus Panicum in North America 8
- Göttingen, herbaria at 3
- Gray Herbarium 1
- Grisebach Herbarium 3
- Gronovius Herbarium 3
- Grouping of species 17
- Guinea grass 79
- Hackel, Eduard, herbarium of 2
- Hackelochloa granularis 312
- Haenke, collections of 4
- Halle, herbaria at 3
- Herbaria, American, examined 1
  - European, examined 2
- Herbarium, Ashe's 2
  - Barbey's 3
  - Berlin, Königlicher Botanischer Garten 2
  - Bernhardi 2
  - Biltmore 1
  - Boissier 3
  - Bonpland 4
- Herbarium, British Museum of Natural History 3
  - Brussels, Jardin Botanique 3
  - Columbia University 1

Page.

- Herbarium, Copenhagen, Botanical Garden of the University, 3
  - Cosson, 4
  - De Candolle, 3
  - Delessert, 3
  - Desfontaines, 3
  - Desvaux, 4
  - Drake de Castillo, 4
  - Elliott, 2
  - Engelmann, 2
  - Field Museum, 1
  - Florence, Orto Botanico, 3
  - Fournier, 4
  - Franqueville, 4
  - Gattinger, 2
  - Geneva, Conservatoire et Jardin Botanique, 3
    - Institut de Botanique de l'Université, 3
  - Göttingen, Botanischer Garten der Universität, 3
  - Gray, 1
  - Grisebach, 3
  - Gronovius, 3
  - Hackel, 2
  - Halle, 3
  - Hitchcock's, 2
  - Jussieu, 4
  - Kew, 3
  - Lamarck, 4
  - Linnæan, 3
  - London, British Museum of Natural History, 3
    - Kew, 3
  - Madrid, Jardin Botanico, 3
  - Michaux, 4
  - Missouri Botanical Garden, 2
  - Mohr, 2
  - Muhlenberg, 2
  - Munich, Königliches Botanisches Museum, 3
  - Nash's, 1
  - New York Botanical Garden, 1
  - Padua, Orto Botanico, 3
  - Paris, Bonpland, 4
    - Cosson, 4
    - Desvaux, 4
    - Drake de Castillo, 4
    - Fournier, 4
    - Franqueville, 4
    - Jussieu, 4
    - Lamarck, 4
    - Michaux, 4
    - Richard, 4
    - Steudel, 4
  - Parry, 2
  - Philadelphia Academy, 1
  - Prague, Botanischer Garten, 4
    - Museum des Königreichs Böhmen, 4
  - Presl, 4
  - Richard, 4
  - St. Petersburg, Académie Impériale des Sciences, 4
    - Botanical Garden, 4
  - Scribner, 2
  - Short, 2
  - Sloane, 3
  - Steudel, 4
  - Stockholm, Naturhistoriska Riksmuseum, 4
  - Swartz, 4
  - Torrey, 1
  - Trinius, 4
  - United States National, 2
  - Van Heurck, 2
  - Vienna, Kaiserliches und Königliches Naturhistorisches Hofmuseum, 4
  - Walter's, 3
  - Willdenow, 2
- History and limitation of the genus Panicum, 11
  - of Panicum after 1753, 15
- Hitchcock, A. S., herbarium of, 2
- Hog millet, 69
- Holcus sorghum, 11
  - *spicatus*, 15
- Hymenachne, 16
- Ichnanthus *glaber*, 88
- Jussieu Herbarium, 4
- Karwinsky, Mexican collections of, 4
- Kew, herbarium at, 3
- Lagasca, duplicate types of, 3
  - types of, 3
- Lamarck, duplicate types of, 3
  - Herbarium, 4
- Lancearia, 271
- Lanuginosa, 208
- Lasiacis, 16
  - divaricata, 16
- Latifolia, 312
- Laxa, 110
- Laxiflora, 158
- Liebmann, Mexican collections of, 3
- Lindman, South American collections of, 4
- Linnæan Herbarium, 3
- London, herbaria at, 3
- Madrid, herbarium at, 3
- Maps, illustrating distribution, 10
- Martius, collections of, 3
- Maxima, 78
- Mez, Carl, work of, 3
- Michaux Herbarium, 4
- Milium, Linnæus's limitation of the genus, 13
  - pre-Linnæan use of the name, 11
  - Tournefort's limitation of the genus, 11
  - *capillare*, 60
  - *clandestinum*, 312
  - confertum, 13
  - effusum, 13, 14, 15
  - *esculentum*, 69
  - *latifolium*, 314
  - *microspermum*, 131
  - *panicum*, 15, 69
- Millet, 11
  - broom-corn, 69
  - fox-tail, 13
  - hog, 69
  - pearl, 15
- Missouri Botanical Garden Herbarium, 2
- Mohr Herbarium, 2
- Mueller, F., Mexican collections of, 4
- Muhlenberg Herbarium, 2
- Munich, herbarium at, 3
- Nash, G. V., herbarium of, 1
- Nees von Esenbeck, types of, 3

Page.
New York Botanical Garden Herbarium 1
Nomenclature, American code of botanical. 5, 14, 15
Nudicaulia ... 179
Nuttall, collections of ... 1
Oligosanthia ... 278
Oplismenus compositus ... 12
Otachyrium ... 16
Padua, herbarium at ... 3
Panicularia *elongota* ... 118
    melicaria ... 118
Panicum aciculare **166**, 169, 173, 174, 175, 176, 212
    aculeatum ... **297**
    acuminatum ... 151, 152, **222**, 226
    acutifolium ... 129
    addisonii ... 240, **243**
    adscendens ... 134
    adspersum ... 18, **43**, 44
    affine ... 30
    agrostidiforme ... 100, 115
    agrostis ... 115
    agrostoides ... **100**, 101, 102, 103, 104
        elongatum ... 104
    alabamense ... 244
    albemarlense ... **212**
    albomaculatum ... **311**
    albomarginatum 259, **260**, 261, 262, 263, 264
    alopecuroides ... 12
    altissimum ... 82, 141
    amaroides ... 94, 95
    amarulum ... **96**
    amarum ... **94**, 95, 96
        minus ... 95
    ambitiosum ... **329**
    americanum ... 12, 14, 15
    amplectans ... 49
    anceps ... 100, 105, **107**, 109, 110, 331
        angustum ... 107
        densiflorum ... 107, 108
        pubescens ... 105, 109
        strictum ... 97
    angustifolium ... 17,
        128, **170**, 171, 172, 173, 174, 190, 201
    annulatum ... 185
    annulum ... **185**
    apiculatum ... 113
    appressum ... 31
    aquaticum ... 48, 303
    arborescens ... 13
    arenarium ... 85, 88
    arenicola ... 166
    arenicoloides ... **178**
    arizonicum ... 18, 42, **44**, 45
        laeviglume ... 45
        majus ... 45
        tenue ... 45
    arundinariae ... 329
    ascendens ... 134
    ashei ... 154, 193, 300, **301**, 302
    asperrimum ... 69
    atlanticum ... 233
    aturense H. B. K ... 16
    aturense Balb ... 325
    auburne ... **223**
    aurelianum ... 36
    aureum ... 158
    austro-montanum ... 267
    avenaceum ... 81

Page.
Panicum *balbisianum* ... 325
    baldwinii ... 268, 269
    barbinode ... 17, 18, **33**, 34, 35
    barbipulvinatum ... 61, **62**
    barbulatum 6, 7, 181, 183, **193**, 195, 207, 331
    bartowense ... **52**, 53
    beckmanniaeforme ... 30
    bergii ... 78
    beyrichii ... 136
    bicknellii ... **177**, 178
    biglandulare ... 120, **123**, 124
    bobarti ... 60
    bogueanum ... 185
    boreale ... **189**, 239
    boscii ... 193, 314, **317**, 318
        molle ... 318, **319**, 320
    bourgaei ... 112
    brachiatum ... 48, 49
    brachyanthum ... **128**
    brachyclados ... 122
    brasiliense ... 134
    breve ... **271**
    brevifolium ... 13, 62, 129, 329
    brittonii ... 264, 265
    brizaeforme ... 30
    brizoides ... 31
    buchingeri ... 329
    bulbosum ... 58, **81**, 82, 83
        avenaceum ... 82
        minus ... 83
        sciaphilum ... **83**
        s. var. *violaceum* ... 82
    bushii ... 177
    caerulescens ... **197**
    caespititium ... 72
    caespitosum ... 36, 43
    cahoonianum ... 169
    calliphyllum ... **178**
    campestre ... 57
    capillaceum ... 129
    capillaceum strictius ... 129
    capillare ... 13, 55, 56. 57. 59, **60**, 63, 70, 129
        agreste ... 60
        brevifolium ... 62
        campestre ... 57
        flexile ... 55
        gattingeri ... 57
        geniculatum ... 57
        glabrum ... 64
        miliaceum ... 67
        minimum ... 58
        minus ... 55, 283, 301
        sylvaticum ... 58
        vulgare ... 60
    capillarioides ... **72**
    caricifolium ... 159, 160
    caricoides ... 99
    carinatum ... 323
    carnosum ... 30
    carolinianum ... 323
    cartilagineum ... 329
    cayennense ... **70**, 140, 331
        divaricatum ... 140
        patulum ... 70
    chamaelonche ... **268**, 269, 270
    chapmani ... **24**
    chartaginense ... 40, 41, 44

Page.
Panicum *chloroticum* 48, 50, 51
    agreste 48, 49
    pingue 49
    sylvestre 48, 49, 51
  chrysopsidifolium **168**, 169, 171, 175
  ciliatifolium 162
  ciliatissimum **324**
  ciliatum **162**, 163, 164, 216
  ciliiferum 237
  ciliosum 220
  cimicinum 325
  clandestinum 13, 290, 298, **312**, 314
    pedunculatum 312
  clutei 188
  colonum 34
  coloratum 87, 88
  columbianum 240, 246, **247**, 248, 259
    thinium 240, 248
  combsii **106**
  commelinaefolium 304
  commonsianum 238, 240, **242**, 243
  commutatum 6, 154, 237, 301, 302,
      303, 304, 305, 307, 310, 317, 318, 329, 331
    consanguineum 169
    latifolium 304
    minus 301, 304
  comophyllum 222
  compositum 12
  conchatum 124, **329**
  concinnius **268**
  condensum 101, **102**
  confertum 86
  confusum 82
  consanguineum **169**, 171, 233
  contractum 102
  cordifolium 329
  cordovense 329
  costaricense **184**
  crusgalli 12, 14
  cryptanthum **299**, 300
  ctenodes 121
    majus 122
  cupreum 110, 118, **120**
  currani 304, 305
  curtifolium 258. **267**
  curtisii 171, 323
  curtivaginum 196
  cuthbertii 264
  cynodon 300
  dactylon 13, 14, 15
  dasytrichum 139
  debile 118, 127
  decipiens 118
  decolorans **66**, **328**, 329
  decoloratum 312, 313
  delawarense 156
  densiflorum 113
  densum 330
  depauperatum **151**, 152, 154, 155, 157
    involutum 152
    laxum 152
  deustum 193, 259
  diandrum 115
  dichotomiflorum **48**, 49, 52, 53, 54
  dichotomum 13, 142, **190**,
      191, 194, 195, 198, 233, 252, 269, 301, 331
    acuminatum 222

Page.
Panicum dichotomum *barbulatum* 193
    commune 191
    curvatum 330
    divaricatum 191
    elatum 298
    fasciculatum 216
    gracile 330
    lanuginosum 220
    nitidum 183
    spathaceum 330
    sphaerocarpon 251
    villosum 233
    viride 190, 191
  diffusum 6, 55, **72**, 73, 74, 77, 330, 331
  digitarioides 323
  dimidiatum 12, 323
  disciferum 330
  discolor 181, 187, 330
  dispersum 136
  dissectum 12, 15
  dissitiflorum 44, 45
  distans 113
  distantiflorum 22, **23**, 24
  distichum 113
    lancifolium 114
  divaricatum 16, 118
  drummondii 327
  dubium 112
  dumus 195
  earlei 267
  eatoni 201
  elatius 141
  elephantipes 18, 48, **53**, 88
  elliottii 49, 330
  elongatum 88. 104
    ramosius 100, 101
  ensifolium 259, **264**, 265, 266
  enslini 304
  epilifolium 310
  equilaterale 184, 300, 304, **310**, 311
  equinum 33
  equisetum 141
  erectifolium **256**
  eriophorum 298
  cruciformis 321
  erythrocarpon 237
  exiguiflorum **117**, 118
  expansum Fourn 134, 136
  expansum Trin 136
  fasciculatum 18, **38**, 39, 41, 166, 216
    chartaginense **40**, 41, 44
    dissitiflorum 45
    flavescens 39
    fuscum 39
    genuinum 39
    reticulatum 41
  fastigiatum 38
  filiculme 210
  filiforme 12
  filipes **73**, 74. 75, 76
  filirameum 166
  firmandum 330
  firmulum **27**
  fistulosum 53
  flabellatum 64
  flavescens 38, 39
  flavovirens **268**

Page.
Panicum flexile 6, **55**, 58, 59, 61
  flexuosum 186, 330
  floribundum 70
  floridanum 256
  francavillanum 49
  frondescens **121**, 122
  funstoni 203
  fuscatum 38
  fusco-rubens 38
  fuscum 38
    fasciculatum 38
    majus 44, 45
    reticulatum 41
  fusiforme **172**
  gattingeri **57**
  geminatum 17, 18, **30**, 33
  generic description of 18
  geniculatum 48, 49
  georgianum 169
  georgicum 169
  germanicum 15
  ghiesbreghtii 73, **76**, 330, 331
  giganteum 74, 88
  glaberrimum 88, 265
  glabrifolium 269, **270**, 271
  glabrissimum 265
  glaucum 12, 14
  glomeratum 31
  glutinosum 19, **138**
  gongylodes 82
  gouini **86**, 88
    pumilum 86
  gracilescens 330
  gracilicaule 263
  grandiflorum 325
  gravius 193
  grossarium 36, 43
  guadaloupense 33
  guayaquilense 131
  gymnocarpon **327**
  haemacarpon 233, 330
  hallii **74**, 75, 76
  halophilum 86
  havardii **98**
  helleri **281**, 282
  hemitomon **322**, 323
  heterophyllum 181, 247, 251
  hians 98, 110, 117, **118**, 120
    purpurascens 120
  hirsutum Swartz **77**
  hirsutum Lam 135
  hirsutum Willd 139
  hirsutum Vahl 330
  hirticaule **64**, 67, 68
  hirtivaginum 76
  history and limitations of 11
  history of, after 1753 15
  huachucae 7, **214**, 215, 217, 230, 233, 238, 330
    silvicola 7, **216**, 219, 220, 221, 230, 232
  hydrophilum 112
  hygrophilum 49
  ichnanthoides 88
  illinoniense 38, 166
  implicatum 211, **213**, 214, 228, 246
  inflatum 253, 254
  insularum 36
  involutum 151

Page.
Panicum *iowense* 330
  italicum 11, 12, 14, 15
  jejunum 118
  joorii 305, **308**, 309
  jumentorum 78
  junceum 151
  kalmii 251
  kegelii 122
  kunthii 88
  laeve 78
  lancearium 272, **273**, 275, 276
  languidum **232**
  lanuginosum 212, 216, **220**, 221, 224, 298
    huachucae 215
    siccanum 245, 246
  lasianthum 136
  latifolium 6, 13, 280, 283, 304, **314**, 317, 318, 326
    australe 317, 318, 320
    clandestinum 312
    molle 317, 319, 320
  laxiflorum **158**, 159, 160
    pubescens 164, 233, 295
  laxum 100, 110, 112, 113, 114, **115**, 118, 297
    pubescens 115, 116
    variegatum 117
  leibergii **289**, 291
  leiophyllum 308
  lepidulum **75**
  leprieurii 121
  leptomerum 115
  leptostachyum 123
  leucoblepharis 162
  leucothrix **205**, 206, 260, 329
  lindenii 138
  lindheimeri 183, 193, **203**, 206, 215, 219, 248
  linearifolium 151, 152, **155**, 156, 157
  Linnæan species of 12
  liton 259
  littorale 85
  longifolium **105**, 106, 107
  longiligulatum **266**, 269
  longipedunculatum 164
  longum 110, **111**
  lucidum **198**, 200, 244, 330
  macranthum 93, 111
  macrocarpon 283, 304, 314, 315
  macrum 259
  maculatum 195
  malacon 240, **241**
  malacophyllum **280**, 283
  manatense 308, 309, 310
  mattamuskeetense **186**, 187, 188, 189
  maximum **78**, 79, 83
    bulbosum 82
    gongylodes 82
  megastachyum 132
  megiston 23, **141**
  melicarium 48, 118
  meridionale **210**, 211, 212, 214, 228
  microcarpon Muhl. in Elliott 6, **181**, 182, 184, 190, 193, 195, 255, 330
  microcarpon Muhl. 255
    isophyllum 255
    sphaerocarpon 251
  microphyllum 210
  microspermum 131
  miliaceum 11, 12, 13, 14, 15, 17, 48, 67, **69**
  miliare **50**

Page.

Panicum *milium* ... 69
  millegrana ... **135**, 136, 137
  minimum ... 58
  minus ... 55
  minutiflorum ... 117
  minutulum ... 207
  mississippiense ... 253
  molle ... 34, 35, **42**, 45, 320
  monachnoides ... 327
  muhlenbergianum ... 330
  muhlenbergii ... 151, 152
  multiculmum ... 41
  multiflorum ... 48, 254, 255
  multirameum ... **185**, 226
  munitum ... 111
  mutabile ... **307**
  muticum ... 34
  nashianum ... 273
    patulum ... 274
  nealleyi ... 298
  nemopanthum ... 177
  nervosum ... 6, 303, 304, 315
  neuranthum ... 167, 168, 169, **175**, 331
    ramosum ... 172
  nigrescens ... 115
  nigricans ... 38
  nitidum ... 182,
    183, 184, 185, 201, 203, 206, 252, 269, 303
    barbatum ... 181
    barbulatum ... 6, 193
    ciliatum ... 216
    crassifolium ... 251
    densiflorum ... 201
    ensifolium ... 264, 266
    glabrum ... 331
    gracile ... 331
    majus ... 303, 331
    minus ... 268
    octonodon ... 201
    pauciflorum ... 191
    pilosum ... 214
    pubescens ... 233
    ramulosum ... 181
    viride ... 191
  nodatum ... 292, **298**
  nodiflorum ... 183, 207
  nodosum ... 82
  notatum ... 85
  nudicaule ... **179**
  numidianum ... 34
  nutans ... 107
  oaxacense ... 141
  oblongiflorum ... 118
  oblongum ... 125
  obtusiflorum ... 138
  obtusum ... **321**, 322
  occidentale ... **228**, 230, 239
  octonodon ... 201
  oliganthum ... 285
  oligosanthes ... 6, 280. 282, **285**, 286
  olivaceum ... 185, **225**
  olyraefolium ... 121
  onslowense ... 276
  oplismenoides ... 135
  orangense ... 220, 221
  oricola ... 240, **249**
  ornatum ... 331
  orthophyllum ... 173

Page.

Panicum *oryzoides* ... 325
  ovale ... 235, **237**, 238
  ovalifolium ... 13, 129
  ovinum ... 174, 175, 176
  owenae ... 243
  pacificum ... **229**, 231
  paludivagum ... 17, 18, 31, **32**
  paludosum ... 53
  pammeli ... 154
  pampinosum ... **66**
  paniculatum ... 39
  paraguayense ... 34
  parcum ... **68**
  parvifolium ... **184**
  parviglume ... 124, **126**
  parvipaniculatum ... 265
  parvispiculum ... 205, 206
  parvulum ... 259
  paspalodes ... 30, 31, 33
  patens ... 13
  patentifolium ... 277
  patulum ... 274
  pauciciliatum ... **272**
  pauciflorum ... 280, 283, 285, 286, 294
  paucipilum ... 201, 202
  paucispicatum ... 326
  pedicellatum ... **292**, 294
  pedunculare ... 70
  pedunculatum ... 312
  pensylvanicum ... 331
  perlongum ... **158**
  pernervosum ... 281
  petiverii ... 42
  philadelphicum ... 55, 56, **58**, 59, 61
  pictigluma ... 34
  pilisparsum ... 113
  pilosum ... 110, **112**, 118, 214, 227
    epilosum ... 115
    genuinum ... 136
    leiogonum ... 136
    macranthum ... 111
    polygonatum ... 112
  plenum ... **80**
  polyanthes ... 181, **254**, 255
  polycaulon ... 162, **163**
  polygamum ... 78
    gongylodes ... 82
    hirticaule ... 64
  polygonatum ... 110, **112**, 118
  polygonoides ... 321
  polyneuron ... 5, 6, 304
  porphyrium ... 58
  porterianum ... 317
  portoricense ... 331
  potamicum ... 112
  potamium ... 112
  praecocius ... **226**, 330
  praticola ... 79
  pre-Linnæan use of the name ... 11
  preslei ... 132
  probandum ... 136
  procerrimum ... 141
  proliferum ... 49, **50**, 53, 54, 100
    chloroticum ... 50
    geniculatum ... 49
    pilosum ... 49
    strictum ... 49

Page.
Panicum *prostratum* 36, 232
  pilosum **36**
 pruinosum 87
 psammophilum 247
 pseudanceps 105
 pseudopubescens **235**, 236
 pseudoryzoides 325
 puberulum 136
 pubescens 208, 228, 233, 235, 294, 295, 330
  barbulatum 193
 pubifolium 320
 pulchellum **123**, 124
 pumilum 159, 331
 punctatum 31, 33
 pungens 166, 167
 purpurascens H. B. K. 120
 purpurascens Raddi 33, 34
 pyriforme 158
 rafinesquianum 331
 ramisetum 5, **25**, 27, 28
 ramosum 41, **44**, 172
 ramuliflorum 115
 ramulosum 170, 269
  viride 191
 rariflorum 159
 ravenelii 278, 280, 284, **287**
 rectum 151
 redivivum 174
 reflexopilum 331
 repandum **322**
 repens **85**, 87
  confertum **86**
 repente 321
 reptans 17, **36**, 43
 reticulatum 38, 40, 41
 retrofractum 49
 reverchoni 25, **26**
 rhigiophyllum 139, 140
 rhizomatum 105, **109**, 110
 rigens 140
 rigidulum 100
 roanokense **196**, 197
 rostratum 107, 331
 rotundum 133. **139**
 rudgei 70, 71, 133, **139**, 140
  brasiliense 139
 rugosum 127
 rugulosum 135, 136
  glabrescens 136
  hirtiglume 136
  pubescens 136
  subvelutinum 137
 ruprechti 159
 sanguinale 12, 15
 scaberrimum 78
 scabriusculum **298**, 300
 schiffneri 124
 schmitzii **125**, 329
 schnecki 315
 sciaphilum 83
 scoparioides **288**
 scoparium Lam 221, 280, 283, 287, **294**, 297
 scoparium Rudge 139, 140
  angustifolium 286
  genuinum 280, 287
  liebergii 289

Page.
Panicum *scoparium majus* 287
  minus 280, 283
  pauciflorum 280, 286
 scribnerianum 238, 280, 281, 282, **283**, 286, 315
  leibergii **289**
 sellowii 136, 137
  longevaginatum 136
 sessilicaule 331
 setaceum 166, 167
 shallotte 265
 shastense **289**
 sintenisii 24
 sloanei 314
 soboliferum 58
 sonorum **67**
 sparsiflorum 128
 speciosum 331
 sphaerocarpon. 185, 193, **251**, 252, 254, 255, 256, 330
  floridanum 256
  inflatum **258**
 sphagnicola 6, **199**
 spithamaeum 38
 sprengelii 152
 spretum **201**
 stenodes 97, **98**
 stipitatum 100, 101, **104**
 stramineum **67**
 striatum 331
 strictifolium 241
 strictum 151, 207
 strigosum 158, **164**, 295
 stoloniferum **121**, 122
  majus 122
 subbarbulatum 182, 183
 subsimplex 304, 305
 subspicatum 5, 25
 subuniflorum 166
 subvillosum **227**, 229
 taxodiorum 198
 tectum 233
 tenerum **97**, 98
 tennesseense 203, 217, **218**, 219
 tenue 211, 215, 247, **259**, 260, 264, 265, 304
 tenuiculmum 24, 115
 texanum 18, **46**
 thermale 8, 230, **231**
 thomasianum 43
 thurowii **224**
 torreyi 58
 Tournefort's limitation of the genus 13
 tremulum 190
 trichanthum **181**
 trichidiachne 124
 trichocondylum 79
 trichogonum 112
 trichoides 60, **129**, 131
 trichophorum 113
 tricolor 117
 trifolium **261**, 263
 truncatum 30
 tsugetorum 240, **245**, 246, 248
 tuberculatum 141
 tuerckheimii 16
 type species of 13, 14
 umbraculum 127
 umbrosum 122, 301

Page.

- Panicum uncinatum, 16
  - *unciphyllum*, 215, 247, 259
    - forma *pilosum*, 227
    - forma *prostratum*, 232
    - *implicatum*, 213
    - *meridionale*, 211
    - *thinium*, 248
  - urvilleanum, 19, **132**
    - *longiglume*, 132
  - utowanaeum, **24**
  - *valenzuelanum*, 136
  - vaseyanum, 47
  - *velutinosum*, 42
  - *velutinum*, 42, 212
  - vernale, 258, 264, **266**
  - verrucosum, 118, **127**
  - *vicarium*, 251
  - *vilfiforme*, 331
  - villosissimum, 232, **233**, 236, 330
  - *villosum* Ell, 169, 233
  - villosum Lam, 294
  - virgatum, 8, 13, **87**, 88, 92, 93, 94, 100, 329
    - *breviramosum*, 92
    - *confertum*, 88, 89
    - cubense, **92**
    - *diffusum*, 88
    - *elongatum*, 88
    - *macranthum*, 93
    - *obtusum*, 92
  - virgultorum, **125**, 329
  - virletii, 331
  - viscidellum, 116, **296**, 331
  - *viscidum*, 294
  - *walteri*, 280, 317, 322, 323
    - *molle*, 319
  - *waltheri*, 317
  - webberianium, 274, **276**, 277
  - werneri, 155, **156**, 157, 177
  - wilcoxianum, **279**
  - wilmingtonense, 240, **244**
  - wrightianum, **207**
  - xalapense, 154, **159**, 160, 161, 162, 163, 164, 233
    - strictirameum, **161**
  - xanthophysum, 178, **290**, 291
    - forma *amplifolium*, 290
  - *xanthospermum*, 233
  - yadkinense, **195**, 303, 330
  - zizanioides, 314, **325**, 326
- Para grass, 34
- Paris, herbaria at, 4
- Parry Herbarium, 2
- Parviglumia, 124
- Paspalum, 17, 18
- Paspalum appressum, 30, 31
  - dissectum, 12
  - paniculatum, 39
- Paurochaetium, 17, 18, **22**
- Pedicellata, 292
- Pennisetum americanum, 11, 12
- *Phanopyrum*, 18
  - *gymnocarpum*, 327
- Philadelphia Academy Herbarium, 1
- Poiret, types of, 3, 4
- Polypogon monspeliensis, 11
- Prague, herbaria at, 4

Page.

- Pre-Linnæan use of the name Milium, 11
- Pre-Linnæan use of the name Panicum, 11
- Presl, C. B. and J. S., types of, 4
- Ptychophyllum, 18
- Pursh, types of, 3
- Raddi, specimens from, 3
- Rafinesque, types of, 2
- Richard, types of, 4
- Rudge, specimens from, 3
- Sacciolepis, 16
  - striata, 303
- St. Petersburg, herbaria at, 4
- Salzmann, Brazilian collections of, 2
- Schaffner, Mexican collections of, 4
- Scoparia, 294
- Scribner, herbarium of, 2
- *Setaria disticha*, 113
  - *meyeri*, 113
  - *pilosa*, 113
  - *polygonata*, 112
  - *schraderi*, 113
  - *uniseta*, 26
- Short Herbarium, 2
- Sloane Herbarium, 3
- Species, grouping of, 17
  - miscellaneous, 321
  - subspecies and forms, 7
- Specimens, citation of, 8
- Spelling of names, 6
- Sphaerocarpa, 250
- Spikelets, text figures of, 10
- Spreta, 200
- *Steinchisma*, 18, 118
  - *hians*, 118
- Stenotaphrum dimidiatum, 12
- Steudel, types of, 4
- Stockholm, herbaria at, 4
- Stolonifera, 120
- *Streptostachys*, 16
- Subspecies, species, and forms, 7
- Swartz Herbarium, 4
- Swartz, duplicate types of, 3
- Synonymy, 5
- Syntherisma filiformis, 12
  - sanguinalis, 12
- Tenera, 97
- Terminology, 10
- Text figures of spikelets, 10
- Torrey Herbarium, 1
- Tournefort, limitation of the genus Milium, 11
  - limitation of the genus Panicum, 11
- Tricholdia, 129
- Trinius Herbarium, 4
- Type specimens, 4
- Typonyms, 5
- United States National Herbarium, 1, 2
- Urvilleana, 132
- Valota, 18
- Van Huerck, herbarium of, 2
- Verrucosa, 126
- Vienna, herbarium at, 4
- Virgata, 84
- Walter's herbarium, 3
- Willdenow Herbarium, 2
- Wood, Alphonso, types of, 2

L. HOLTZER,
BINDER
BOSTON, MASS.